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All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
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CHICAGO:
105 West Adams St.

WASHINGTON:
17th and H Streets, N. W.

CLEVELAND:
Terminal Tower

SAN FRANCISCO:
215 Market St.

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Railway Age

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Railway Age

Vol. 88, No. 2 January 11, 1930

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Commission's Consolidation Plan

IF additional evidence was needed that the existing consolidation provisions of the Transportation act ought to be repealed, it has been furnished by the general plan of consolidations promulgated by the Interstate Commerce Commission.

The Transportation act of 1920 provided for consolidations, directed the commission to adopt a general plan for them, and laid down certain principles to be observed in making this plan. The principal requirement was that each consolidation should promote the public interest. We have now been afforded abundant evidence that there is no consensus of opinion among those who have studied the subject as to what consolidations will promote the public interest. Professor W. Z. Ripley of Harvard university first made a tentative plan for the commission. Various railway managements subsequently have offered suggestions to the commission which have not agreed with the plan of Professor Ripley. Now the commission has promulgated a general plan which purports to have the support of a majority of its members, but parts of which are vigorously attacked in "concurring" opinions by Commissioners Eastman, McManamy, Taylor and Porter. The commission delayed for nine years to make a general plan, because, as it repeatedly told Congress, its members regarded it as impracticable to make a satisfactory one. It is plain that it finally promulgated a plan only because the provisions of law requiring it to do so were not repealed, and there is no reason for believing its members think that carrying out the plan they have promulgated would promote the public interest.

Is there at present any railway officer, business man or public man that has given any considerable study to the subject who really believes it is desirable to attempt to carry out railway consolidations in accordance with the provisions of the Transportation act? Is there any important organization of railway officers, financiers, business men, farmers or working men that is in favor of it? Is there any real public sentiment in favor of it? If so, the *Railway Age* must admit that its information regarding the movement for consolidations is strangely deficient.

To favor consolidations that will combine railways which will be mutually helpful to each other, establish improved routes of commerce, effect operating economies and simplify regulation of rates is one thing. To favor a general program of railroad consolidations upon the ground that it is in the "public interest", with almost no regard for its actual probable effects upon routes of commerce, railway operating costs and the regulation of rates is an entirely different thing. Consolidations should be effected as means for the attainment of certain definite results. Most of those who now strongly advocate the consolidations of the railways into a "limited" number of systems seem to do

A Warning

Reports have come to us from several friends of the *Railway Age* that they have been annoyed by the importunities of professional photographers who have misrepresented themselves as acting in behalf of this publication. A common method of approach employed by these photographers is to ask a railroad officer to allow a portrait to be taken, telling him that this publication desires his portrait for its files. Once the sitting has been granted, the enterprising photographer then attempts to sell portraits to the sitter.

The *Railway Age* wishes to make it known that it does not authorize any photographer whomsoever to act as its representative. It is true that we do have a large file of photographs of railway officers and that we wish to keep our collection up-to-date and continually add to it. We much prefer to secure these photographs directly from the railway men whose portraits we desire to publish. Occasionally it may occur, however, that a photograph will be needed when none is available. Under such circumstances we may ask the railway officer concerned to permit his photograph to be taken. In such an event, however, the request will be made directly by a member of the *Railway Age* editorial staff and not through any photographer acting in our behalf.

Our friends are advised, therefore, to accord no credence whatsoever to commercial photographers who may urge them to sit for portraits, claiming to represent the *Railway Age*. We hope also, that, if any of our readers are so approached, they will promptly inform us, so that we may take appropriate action.

so because they have decided that there is some magic in consolidations, and that therefore almost any kind of a consolidation must have beneficial results.

The commission made a plan because it believed it had to, not because it wanted to, and it had to find a place in the plan for every railway in the country. The result of its efforts looks as if it adopted certain railways as main stems, attached as many lines to them as it thought it logically could, and, finding it had numerous lines left over, threw them at a map of the United States and let them stay wherever they happened to stick.

There is a wrong way and a right way to effect consolidations. The wrong way is to adopt a general theory, regardless of facts, that consolidation of all the railways into a limited number of systems is desirable, and then try to make the entire railway map conform to this theory. This is the method that has thus far been followed, and if it has not worked well it is because in a country as large as the United States, with such a huge and complicated railway system, it is a wholly unsound and unworkable method. The right way is to make consolidations permissive and then let them slowly be worked out on the initiative of railway managements and with the approval of the Interstate Commerce Commission when it believes any proposed consolidation will be in the public interest.

There are certain parts of the commission's plan which will be approved by some railway financiers and executives because they are in line with what they have already proposed. There are other parts of it which will not be approved by railway managements or anybody else because they are not in line with what anybody believes is desirable. The entire situation as regards consolidations is now in such a mess that the only reasonable thing for Congress to do would be to replace the existing consolidation provisions with very simple provisions authorizing the railroads to make any consolidations of which the commission may approve as in the public interest.

Rate of Return and Depreciation

THE Supreme Court of the United States on January 6 handed down a decision in a case involving the rate of return on value to be allowed the United Railways & Electric Company, of Baltimore, by the Maryland Public Service Commission, which is of interest in relation not only to the railway valuation question but also to the proposed report by Commissioner Eastman on depreciation accounting. The court held that a rate of return of 6.26 per cent, the basis used by the commission in fixing the company's rate of fare is clearly inadequate and also that the allowance for depreciation cannot be limited by the original cost but is to be determined on the basis of the present value of the property.

The court points out that what is a fair return cannot be settled by invoking decisions made years ago based upon conditions radically different from those which prevail today, but that the problem is to be tested primarily by present-day conditions. "Annual returns upon capital and enterprise, like wages of employees, cost of maintenance and related expenses have materially increased the country over," it says. "A rate of return upon capital invested in street railway lines and other public utilities which might have been proper a few years ago no longer furnishes a safe criterion either for the present or for the future." After asserting that there was much evidence in the record to the effect that in order to induce the investment of capital in the enterprise or to enable the company to compete successfully in the market for money to finance its operations, a net return upon the valuation fixed by the commission should be not far from 8 per cent the court said:

"Sound business management requires that after paying all expenses of operation, setting aside the necessary sums for depreciation, payment of interest and reasonable dividends, there should still remain something to be passed to the surplus account; and a rate of return which does not admit of that being done is not sufficient to assure confidence in the financial soundness of the utility to maintain its credit and enable it to raise money necessary for the proper discharge of its public duties.

"With this view of the matter, a return of 6.26 per cent is clearly inadequate. In the light of recent decisions of this court and other federal decisions, it is not certain that rates securing a return of 7½ per cent or even 8 per cent on the value of the property would not be necessary to avoid confiscation."

Commissioner Eastman's proposed report recommends a finding that the basis upon which depreciation charges are to be calculated for property installed before June 30, 1914, is the commission's finding of reproduction cost at pre-war prices, unless the carrier's investment is lower in which case the investment is to be employed. In the street railway case the commission had based the allowance for depreciation upon original cost but the court said that "manifestly, this allowance cannot be limited by the original cost, because, if values have advanced, the allowance is not sufficient to maintain the level of efficiency. The utility is entitled to see that from earnings the value of the property invested is kept unimpaired, so that at the end of any given term of years the original investment remains as it was at the beginning. This naturally calls for expenditures equal to the cost of the worn-out equipment at the time of replacement; and this, for all practical purposes, means present value. It is the set-

tled rule of this court that the rate base is present value, and it would be wholly illogical to adopt a different rule for depreciation."

Who Should Control L. C. L. Consolidators?

THE relationship of car consolidating agencies to the railroads remains a question of the first importance. The status of these companies, which as private carriers not subject to regulation consolidate shipments and ship them under carload rates, has been maintained for many years. More recently, however, their activity —or at least that of one or two such companies—has shown a great increase. It is believed by many railroad men that the intermediation of such agencies in the movement of l.c.l. freight involves real economy for the railroads—saving them the expense of handling individual l.c.l. shipments.

On the other hand, it must be remembered that the forwarders do not hold themselves out to take over all l.c.l. business, and that the railways must continue to provide the same facilities as before for handling that part of it which remains after the forwarders have taken all the tonnage they can get, or all they care to secure. The result certainly must be an increase in the unit cost of handling such l.c.l. traffic as remains on the railroad. Moreover, since the forwarder may pick and choose his traffic, the business he handles will probably be the more remunerative part of the traffic and that left to the railroads will more than likely be the less attractive tonnage. These and other questions arising from the increase in the activities of the car consolidators were discussed in an editorial which appeared in the *Railway Age* of September 28.

The probability of the development of still further complications in the relationship of railways and consolidating companies is raised in the December 30 and January 6 issues of the New York Forwarder. This publication, a champion of the private forwarding agency, asserts that the railroads are acquiring control of important car consolidating agencies, and expresses a fear lest such control give rise to unfair practices. It advocates placing car consolidating agencies under regulation by the Interstate Commerce Commission and says that "railroad control of carloading organizations can only be regarded as a dangerous interference with the independent forwarder."

We are not able to follow the reasoning of the New York Forwarder at all. If the consolidation of l.c.l shipments into carloads is a useful service related to railroad transportation, why then should not the railroads themselves provide the service? If the railroads provide the service and whatever profits are made therefrom remain to railroad owners, then these profits may justly be considered as contributing to the "fair return" to which the railroads are entitled. If, on the other hand, the consolidators are owned by outside interests and take an ever-increasing volume of railroad l.c.l business, the profits they earn are just so much a loss to the railroad owners and to the shipping public, which must then be called upon to pay rates to permit the railroads to earn a fair return on the traffic which they handle directly. If the consolidation of l.c.l. shipments into carloads is desirable, then it appears that it is in the interest of both the railroads and their patrons to have the service performed by organizations owned by or closely affiliated with the railroads. The question is one of the greatest importance and, if private forwarding companies should share the antagonistic views of the New York Forwarder to progress along such lines, the situation will demand even more attention than it has in recent months received.

Business Leaders on Benefits of Improved Freight Service

THE business leaders of the United States place an entirely new valuation on good transportation service because of the numerous beneficial effects that have been produced by the improvements made in railway service during the last seven years. This is strikingly shown by the information given in letters from business leaders that are quoted in an article appearing elsewhere in this issue of the *Railway Age* under the heading, "American Business Reaps Benefits from Improved Railway Service."

Much has been said already regarding the improvements in railway service and their effects. Shippers know much better than railway officers what these effects actually have been. To ascertain definitely and comprehensively what they have been, the *Railway Age* a few weeks ago sent a questionnaire to the heads of all classes of industrial and commercial concerns throughout the country. The article appearing elsewhere in this issue is the first of three articles that will be published summarizing the replies received.

The most emphasis has been placed in the past upon the huge reduction of inventories, and the equivalent increase in the working capital of the country, that the increased speed and dependability of freight service have made possible. Careful study of the information given by business leaders discloses that while these have been the major results, industry and commerce have benefited in numerous ways which even railway officers have never thought of, and to which attention has not heretofore been called. Every reader of the *Railway Age* will get from these articles new ideas regarding the advantages of good transportation service in an

industrial civilization such as ours in which speed is of so much importance.

It cannot be too strongly emphasized that if railway service is to play in future the part that it should play in the drama of industrial, commercial and financial affairs, business leaders, railway leaders and regulating authorities must get and keep a new conception of the relative importance to the general economic welfare of railway rates and railway service.

When Cheap Service Was Excessively Emphasized

For a long period of years, which ended in 1922, the main and almost sole objective of railway officers, shippers and regulating authorities was cheapness in freight transportation. Railway managements devoted their thoughts and energies to increasing freight train loads for the purpose of reducing operating costs, and thereby increasing net earnings. The speed of freight trains and the regularity of delivery of freight were given minor consideration. While railway managements were thus emphasizing the reduction of operating costs, shippers were equally emphasizing reductions of rates. Occasionally somebody said that good service was more important to the shipper than low rates, but apparently nobody really believed it or understood the significance of the statement. In the period of drastic regulation which began in 1906 regulating authorities unanimously and heartily accepted the view that good service would do little as compared with low rates to promote the general economic welfare, and rates were reduced with practically no regard for the probable effects upon service. In consequence, for some years freight service was inadequate, slow and unreliable.

The heavy losses suffered by all classes of business concerns during the five years ending with 1920, and again in 1922, very forcibly awakened business leaders to a realization of the disastrous effects of poor transportation service. Many large concerns had been almost ruined by the accumulation of huge inventories at high prices in 1919 and 1920, and the subsequent precipitous decline of commodity prices. They began trying to curtail their inventories by "hand-to-mouth" buying. Almost at the same time the railways, in the early part of 1923, in reliance upon the assurances of the Transportation act, adopted a large program of improvements for the purpose of providing the public with adequate and better service. Since then freight service has been adequate and has constantly grown more speedy and dependable.

The contrast between the effects produced upon general business by the different kinds of freight service rendered before and since 1923 emphasizes a fact of the very greatest importance. This is, that when a shipper gets a reduction of rates the only thing he gets is a reduction of his freight bill; while when he gets an improvement in service he gets numerous advantages which, combined, are likely to be worth many times as much to him as any reduction of rates that he could probably get.

What Is Good Service Worth?

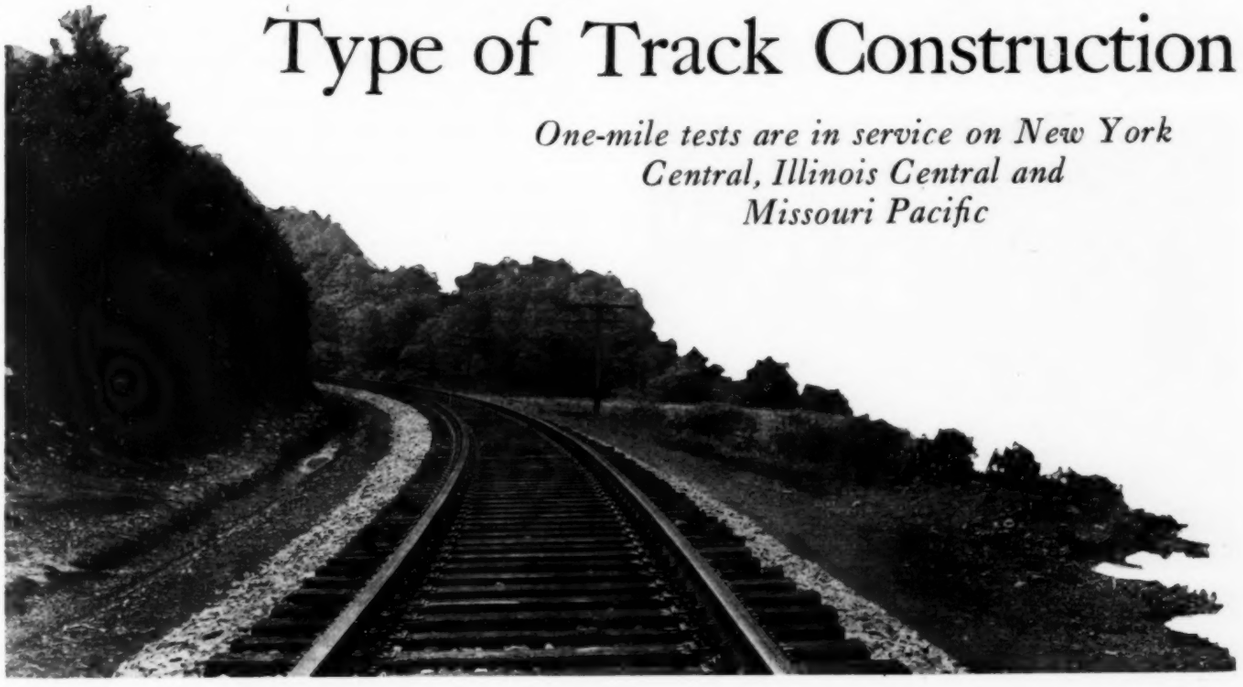
In the article published elsewhere in this issue there is given a list of more than a dozen different important advantages derived by business from good freight service which were specifically mentioned by business leaders in their letters to the *Railway Age*. The huge reduction of inventories has released billions of capital for productive use; and in numerous ways improved freight service has helped industrial and commercial concerns to reduce their operating expenses and increase their sales. Considering all its results, what is it worth annually to American business? Nobody can tell. President Hoover, when he was secretary of commerce, roughly estimated that every shortage of cars cost American business a billion dollars; but he did not attempt to say in just what ways business had to pay this cost. Assuming an average annual cost of 25 per cent tor carrying inventories, a reduction of four billion dollars in the total inventories carried by business concerns is equivalent to a saving of one billion dollars annually, or 20 per cent in freight rates. Unquestionably the aggregate reduction in inventories has been much greater than this; and if the other advantages derived from improved service be considered it seems not improbable that the total savings to business have been more than equivalent to a 30 per cent reduction in freight rates.

On the one side, then, industry and commerce must consider the freight rates they must pay, whether they get poor or good service; and on the other hand, they must consider the enormous difference that is made by poor or good railway service in the capital and operating costs required to carry on a given amount of production and commerce. Experience shows that no greater economic mistake can be made than that of considering the cost of transportation without considering at the same time the kind of transportation that can be secured at that cost, and the numerous unfavorable or favorable effects that will be produced upon general business according as freight service is inadequate, slow and unreliable, or adequate, fast and dependable.

There are still many shippers, especially farmers, who consider only what they pay for railway freight service, forget the difference between the kind of service formerly rendered and rendered now, and disregard the fact that the kind of service they get largely determines the way in which they can conduct their own business and the costs they must incur in carrying it on. Such expressions and information as the *Railway Age* has secured from business leaders regarding the numerous beneficial effects of good railway service upon general business should, therefore, be highly useful in educating other business men, farmers and regulating authorities regarding a matter which is of the greatest economic importance to the American people.

Three Roads Experiment With New Type of Track Construction

One-mile tests are in service on New York Central, Illinois Central and Missouri Pacific



An Installation of Geo Track on a 4½-deg. Curve on the New York Central

WITHIN the last year a new type of track construction has been introduced into this country, and is now under test on three of our larger roads. While new in this country, this type of track, which is known as Geo track, is being used extensively in a number of European countries, especially in Germany, where over 6,000 miles is in main line service. The fundamental differences between this new type of track and most of our present track construction, lie primarily in the design of the tie plates for both joint and intermediate ties, the method of fastening the plates to the ties, and the method of holding the rails in position. Other differences lie in the design of the joint splice bars and the use of compressed wooden shims as cushions between the rails and the tie plates. Like our present high standard track, Geo track employs T-section rails, treated ties and a good grade of crushed stone or gravel ballast.

Altogether, three miles of this track are now in service in this country: One mile in the northbound main track of the Illinois Central, near Carbondale, Ill.; another mile in the single-track Kansas City-Osawatomie line of the Missouri Pacific, about 10 miles south of Kansas City, Mo.; one-half mile on the eastbound freight main of the New York Central about four miles east of Rome, N. Y.; and another half mile on the Pennsylvania division of the New York Central, near Jersey Shore, Pa. All of these sections were installed during the latter part of November and the early part of December, 1928, except the section near Jersey Shore, which was not installed until last spring.

In the new type of track construction, the intermediate tie plate assembly consists of a special rolled steel tie plate, two rolled steel clamps with bolts for holding the rail to the plate, a wooden shim and four screw spikes for holding the plate rigidly to the tie, independent of the rail fastening. All of the metal parts of this assembly are manufactured from steel containing 0.25 per cent copper.

The tie plates vary in size with the section of rail used, but, in general, are larger than those used in this country. They have a smooth base, and their top face is provided with two rail shoulders, each about one inch square in section, which hold the rail in alinement. The plates are canted as desired and have four round spike holes.

Two rolled steel clamps, each three inches long and more or less similar in cross-section to a flattened letter "U," hold the rail to each tie plate. These clamps, one of which is used on each side of the rail, are placed with their legs downward, straddling the shoulders on the plates, the inside leg of each clamp bearing on the flange of the rail base, while the outside leg bears on the tie plate just outside the shoulder. The clamps are drawn down firmly against the rails and the plates by means of a bolt and nut assembly, in which the bolt, which is ⅞ in. in diameter and 2¾ in. long, has a special head, semi-circular on the under side, which fits into a slot of similar section milled into the center of each of the shoulders on the plates. The threaded shank of the bolt passes up through a hole in the top of the clamp and is gripped by a hexagonal nut fitted with a double spring washer. Thus, at each plate, the rail is gripped firmly on each side by a fastening which is entirely independent of the tie fastening.

The tie plates are fastened to the ties by means of four screw spikes which are screwed into pre-bored holes. These spikes are similar to the A. R. E. A.

screw track spike, except that the underside of the head is flat instead of sloped.

The shims, which are applied between the tie plates and the rail base, are made from poplar, which, after being cut to size, is compressed from a thickness of 23/64 in. to 13/64 in. and then creosoted. These shims have the same width as the rail base but are of such length that they overlap the sides of the tie plates about

Geo Track on the Missouri Pacific Where a 5-deg. 45-min. Curve Reverses to a 5-deg. 10-min. Curve

one-half inch on each side. Through this arrangement the ends of the shims, which are not under the pressure of the rail, swell to their original thickness under the influence of moisture and the air forming rims which prevent the movement of the shims parallel with the rail when under traffic. Lateral movement of the shims is prevented by the rail shoulders on the tie plates.

The joint plates of the Geo track are of the same design as the intermediate plates, except that they are wider and have two or more rail clamps on each side. These plates are made for both the supported and suspended types of joints, and in both cases the shoulders are continuous throughout their widths. The splice bars used in connection with the plates are more or less similar in section to the head contact joint bars in use in this country, except that the lower leg of each bar has been cut back to fit within the tie plate shoulders. These bars can be furnished with either four or six holes as desired, and either type of bar can be used with either of the two types of joint plates. The shims used at the joint plates are similar to those used at the intermediate plates, except that they are correspondingly longer.

In making an extensive installation of Geo track, it is recommended that a method be followed which has proved successful in certain European countries. In this method, which, in effect, is to provide an entirely new track structure above the base of the ties, the section of track to be rebuilt is turned over to the track forces and completely dismantled in advance of the new track construction. Then the new track is constructed, which calls for pre-adzed and bored treated ties, new rail, and Geo tie plates and rail fastenings. It is also recommended that the screw spiking of all tie plates to the ties be done at the treating plant, using power-driven equipment, and further, that power wrenches be used in the field for tightening the rail clamp bolts.

While the practices recommended were recognized as the most economical in making extended installations of Geo track, none of the three roads which made installations in this country followed the recommended practices in every detail, owing to the inadvisability of organizing so completely for the construction of only a mile or less of track. However, each of the three roads tried to comply with the recommendations insofar as it was possible for them to do so under the conditions involved.

Details of N. Y. C. Installations

In the New York Central test near Rome, the rails and ties were renewed completely and the ballast was cribbed out and cleaned before being replaced in the new track. Likewise, Geo tie plates and track fastenings were used throughout. The new rail was the standard 105-lb. Dudley section of the New York Central, and the ties were all of creosoted oak, maple, birch and beech, similar to those used elsewhere in this class of track on the New York Central. Sixty per cent of the joints in the test are of the supported type with six-hole bars, while the remaining 40 per cent are of the suspended type with four-hole bars. The New York Central standard of 24 ties to the 39 ft. panel was used for the most part, although 10 panels of only 22 ties each were provided as recommended with the new type of construction.

All of the new plates used in the installation have a cant of 1 in 40, which is standard on the New York Central, and are 53/64 in. thick at the heel and 19/32 in. thick at the toe. The intermediate plates are 14 5/32 in. long by 6¾ in. wide and weigh 21½ lb. each; the supported type joint plates, which are 14 5/32 in. long, from heel to toe, and 16 11/32 in. wide, weigh 50 lb. each; and the suspended type joint plates, like the other plates, are 14 5/32 in. long, but are 27¼ in. wide and weigh 90 lb. each. All of these plates have the same cross-section from heel to toe, and are truly rectangular in plan, except the supported type joint plates which have had their corners cut off to save metal and to reduce their weight.

In the other half-mile test section on the New York Central, near Jersey Shore, Pa., the entire test section is on a grade of approximately 0.3 per cent; one-half on tangent track, and the other half on a curve of 4 deg. 30 min. In this test, new rail of 105-lb. Dudley section was laid, and in 12 panels, only 22 ties were used, as recommended with Geo construction. In the remaining 55 panels, 24 ties were laid to the panel. Sixty per cent of the joints in the test are of the supported type with six-hole bars, while the remaining 40 per cent are of the suspended type with four-hole bars.

Illinois Central and Missouri Pacific Tests

The one mile test section on the Illinois Central is on tangent track, but on heavy grades in both directions. New 110-lb. R. E. section rail was used on new creosoted red oak ties, and all of the new plates installed were the same as those used on the New York Central, except that practically all of the joints installed were of the suspended type, using a four-hole bar.

In making the test installation on the Missouri Pacific a number of special features were adopted. On this road, where the test section is practically all on curves and with grades in both directions, the track was relaid with new 90-lb. A. R. A.-A section rail on new treated ties of pine and red and white oak. The Geo intermediate plates on this section were similar in design to those used on the other two roads, but slightly smaller. All of the joint plates installed were for the

suspended type of joint with four-hole splice bars, but these plates were furnished in two different sizes, half of the plates being of each size. These plates have relatively the same lateral cross-section as the similar plates used on the other roads, but in one set, they are 27 in. wide and weigh 80 lbs. each, while in the other, they are 32 in. wide and weigh 102 lbs. The distinctive feature of the 32-in. plates is that they have four rail clamps on each side.

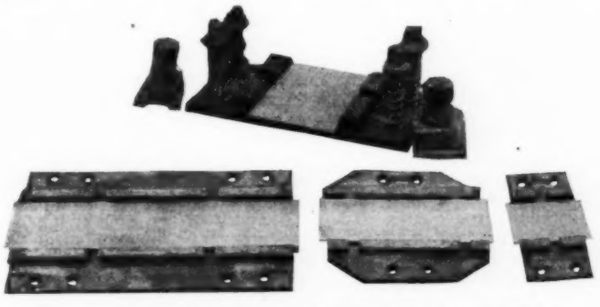
All of the test installations were made under traffic, except the one on the Illinois Central, where exclusive use of the track was secured for a number of hours each day.

New Track Was Carefully Designed

Geo track was designed with the primary aim of providing a stronger, safer, and more economically maintained track structure. One of the principal objectives of the new type of construction is to prolong the life of ties by minimizing the mechanical wear and decay at the tie plate fastening. To this end the Geo plates were made larger than the average plates used in this country, and the plate-holding spikes were moved out as far as practical and made entirely independent of the rail fastening to reduce the strain on the wood fibres in the spike holes. In addition, screw spikes are used in connection with pre-bored holes, because of their lesser destructive effect upon the wood fibre of the ties than cut spikes.

Along with these features designed to prolong the life of the ties, the principal feature to this end in the Geo type of construction is that the tie plates are so firmly seated on the ties that water is excluded and there is no movement whatever between the plates and the ties, and further, that the rail is fastened tight to the plates and yet has a certain amount of elasticity. The elasticity is provided through the wooden shims and the double spring washers on the clamp bolts. The tight fastening of the rail to the plate by the clamp and clamp bolt is said to have the effect of increasing the width of the rail base.

It is also said that the shim and the secure fastening of the rail to the plate prevents hammer action between these parts; that there is less wave motion in the rail as it is stiffened by the clamps; and that Geo track holds its line better than the usual construction. As



A Complete Intermediate Tie-Plate Assembly and Three Styles of Geo Plates

these factors are of particular importance, it is expected that the life of ties will be largely increased, and that approximately 20 per cent additional life should be secured from the rail.

Through the tight grip of the rail clamps, which in effect makes the rail and the tie plates one unit, experience with this type of construction in foreign countries has shown that rail creeping is eliminated, although no rail anchors are used, and that expansion and contraction due to temperature changes are considerably reduced. As a consequence, it is said that the German State Railways, where Geo plates are standard construction, have standardized on 30-meter (98 ft.) rails on all of their main lines, making expansion allowances only about equal to that which is allowed by the railroads in the United States for 39-ft. rails. In

A Section of the Test Track Installed on the Illinois Central

view of this quality of Geo track, it was recommended that a minimum of expansion be provided in the test installations made in this country, but in an effort to check this feature, the rails were laid tight on the Missouri Pacific, the normal expansion allowance was reduced on the Illinois Central, and normal expansion was provided between the rails on the New York Central. Owing to the more rigid type of construction, it was suggested that sufficient stable track could be secured by reducing the number of ties in each 39-ft. panel from 24 to 22, and this suggestion was incorporated in 20 panels of the work on the Illinois Central, 25 panels on the Missouri Pacific, and 22 panels on the New York Central.

Other advantages claimed for the new type of track structure are that it is smoother riding and much quieter, resulting in greater comfort to passengers and a saving in the maintenance of rolling stock; that with the plates applied at a central plant, using screw spikes, a perfect gage will be secured and maintained; and that, owing to the greater holding power of the rail clamps, the stresses in the joint bars are greatly reduced. It is also claimed that the double shoulder plate prevents track buckling and rail spreading, and that there is considerably less danger of a serious accident in case of a broken rail. All of these claims lead to the broader claim that Geo track permits faster train operation with safety.

Reduced and more economical maintenance on this type of track is expected not only through the greater life of its component parts, but through the fact that the renewal of rail is simplified. In this operation, it is necessary only to release the rail clamps which hold the rails to the plates, and there is no necessity for disturbing the plates on the ties, or for adzing or for plugging spike holes. In spite of the ease with which rails can be renewed, it will be noted that, owing to the high shoulders on the plates, the rails can be thrown out of

gage only by raising them for a considerable length, which in turn, requires the loosening of a large number of the clamp bolts.

Besides being standard construction on the German State Railways, where over 6,000 miles of Geo track is in service, this type of track is also standard on the railways of Belgium, Jugoslavia, Norway and Sweden, on which about 225 miles of Geo track is in service. In addition, Geo track is being tested in France, Spain, Japan and Hungary.

As might be expected, this new type of track construction has a higher initial cost than the present type of construction used in this country, but it is claimed by those who point to the results which have been effected in Europe, that this larger initial cost will be offset over a period of years by economies in maintenance. As no definite arrangements had been made in this country for the manufacture of Geo tie plates and rail fastenings, all of the special materials used in the installations on the New York Central, the Illinois Central and the Missouri Pacific, with the exception of the splice bar bolts and washers, were manufactured in Germany. It is expected that all of the materials necessary for further installations in this country will be furnished by American mills, operating under license from the American Geo Company, New York, which company arranged for the three test installations now in service.

Use of Traffic to Induce Railway Buying Called Unfair

WASHINGTON, D. C.

THE Mechanical Manufacturing Company, a company said to be controlled by members of the Swift family, principal stockholders of Swift & Co., and R. O'Hara and W. A. Mayfield, of the traffic department of Swift & Co., were expected to file an answer by January 10 to the complaint issued by the Federal Trade Commission in December charging them with using unfair methods of competition in violation of Section 5 of the Federal Trade Commission act, or to appear at a hearing on that date. The violation alleged is that the respondents had "induced and compelled" railway companies to purchase draft gears and other equipment manufactured or sold by the Mechanical company by promises of a certain volume of freight to be shipped by Swift & Co., and subsidiaries or by threats of withdrawal of freight traffic. The text of the charges stated in the complaint follows:

1. The respondent, Mechanical Manufacturing Company, is a corporation organized and existing under and by virtue of the laws of the state of Illinois, engaged in the manufacture of meat packing house machinery and equipment and in the sale of said products to meat packing houses located in the several states of the United States and in foreign countries, causing said products to be shipped when sold, to the purchasers thereof located in states other than the state of Illinois and in foreign countries. This respondent also manufactures and/or sells bumping posts, draft gears and other railway equipment under the trade name of "Durable" which it offers and sells to railway companies for use on railway cars. Said corporation has outstanding capital stock as follows: Common, 732,700 shares, par value $10.00 per share; Preferred, 3,000 shares, par value $100.00 per share. The majority of the Common stock is owned and/or controlled by members of the Swift family, principal stockholders of Swift and Company, Chicago, Illinois, and employees of said Swift and Company including said respondents, R. O'Hara and W. A. Mayfield.

2. Swift and Company, referred to in Paragraph One hereof, is an Illinois corporation engaged in the meat packing business with its principal office and slaughtering plants located in the city of Chicago in the state of Illinois and with twenty or more branch slaughtering plants located in other sections of the United States where live stock is produced and is the largest meat packer in the United States. In the course and conduct of its said business, Swift and Company and its subsidiary corporations ship large quantities of meat products and by-products from their various slaughtering plants to their distributing depots know as branch houses, located in the principal towns and cities of the United States numbering more than five hundred, utilizing for this purpose refrigerator cars owned by a Swift and Company subsidiary, the Swift Refrigerator Transportation Company, which owns more than 7,500 cars, causing said cars to be transported over the lines of the various railway companies of the United States. The said Swift and Company negotiates with said railway companies with respect to the transportation of products of Swift and Company and its subsidiary corporations through its Traffic Department located at its Chicago office.

3. Respondents, R. O'Hara and W. A. Mayfield, at all times herein mentioned have been and now are manager and assistant manager, respectively, of the Traffic Department of the said Swift and Company and as such are in direct charge of the traffic negotiations with railway companies, and have charge of the routing of cars carrying said products of said Swift and Company and its subsidiary corporations.

4. The respondent, Mechanical Manufacturing Company, in the course and conduct of its said business, during the past three years, in co-operation with the said respondents, R. O'Hara and W. A. Mayfield, as Traffic Department officials of the said Swift and Company, has sought to induce and compel, and has induced and compelled railway companies to purchase said "Durable" draft gears and other equipment manufactured and/or sold by said respondent, Mechanical Manufacturing Company, in preference to draft gears and other equipment manufactured and sold by competitors, by the following methods:

(a) by promises and assurances of certain volume of freight traffic to be shipped over the lines of said railway companies by Swift and Company and its subsidiary corporations.

(b) by promises and assurances of an increased volume of freight traffic to be shipped over the lines of said railway companies by Swift and Company and its subsidiary corporations; and,

(c) by threats of withdrawal of freight traffic from the lines of said railway companies, by said Swift and Company and its subsidiary corporations, if said railway companies would not purchase the said "Durable" draft gears and/or other equipment manufactured and /or sold by said respondent, Mechanical Manufacturing Company.

5. Respondents, R. O'Hara and W. A Mayfield, have cooperated with and assisted the said respondents, Mechanical Manufacturing Company in the sale of its said "Durable" draft gears and/or other equipment, to railway companies as set forth in Paragraph Four thereof, particularly by utilizing their official positions in the said Swift and Company, to induce and compel the officials of railway companies to give undue preference to draft gears and/or other equipment manufactured and sold by the said respondent, Mechanical Manufacturing Company, by means of promises of freight traffic from Swift and Company and its subsidiary corporations and threats of withdrawal of said traffic if the railway companies would not purchase draft gears and other equipment manufactured and/or sold by said respondent, Mechanical Manufacturing Company.

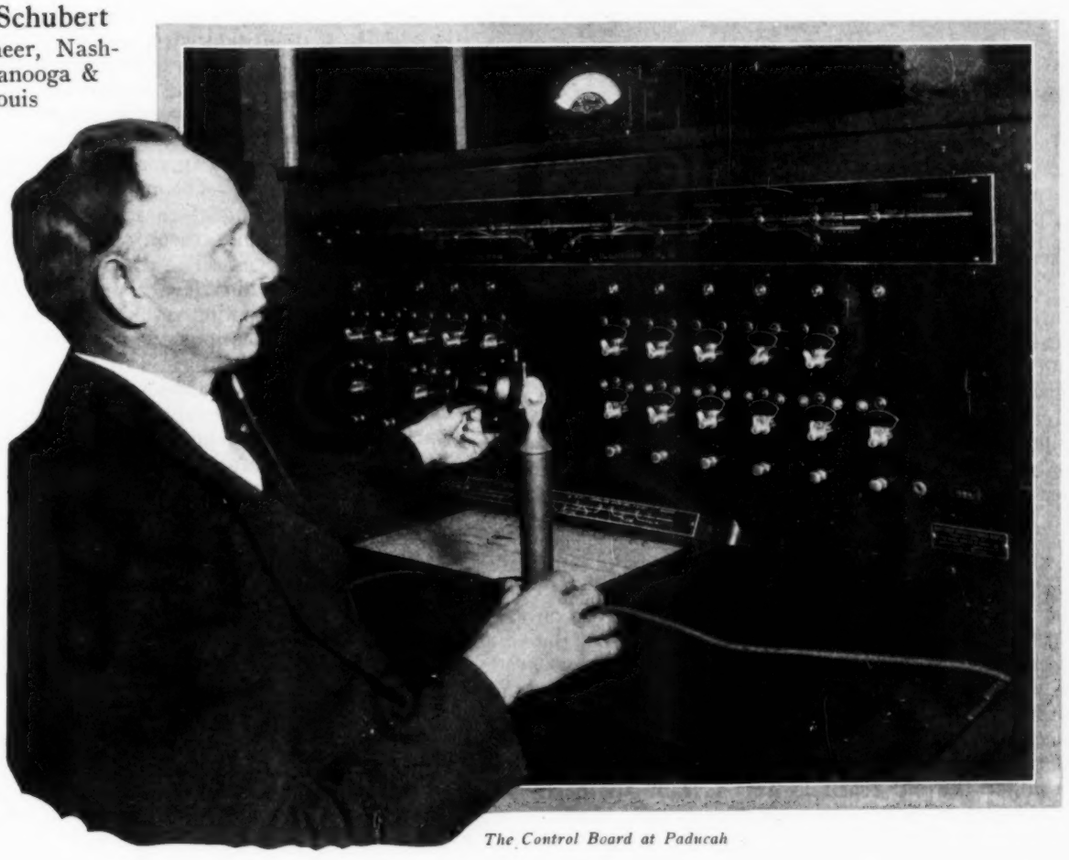
6. During the times above mentioned and referred to, other individuals, firms and corporations located in the various states of the United States have been and still are engaged in the manufacture of draft gears and other railway equipment and in the sale thereof to the railway companies of the United States, and the respondent, Mechanical Manufacturing Company, has been and still is engaged in competition in commerce in the sale of the said "Durable" draft gears and other equipment with said other individuals, firms and corporations.

7. The foregoing alleged acts and things done by the respondents named therein are all to the prejudice and injury of the public and competitors of the respondent, Mechanical Manufacturing Company, and unduly tend to suppress competition between the said respondent and competing manufacturers of draft gears and other equipment, and to create a monopoly in said respondent in the manufacture and sale of draft gears and other equipment and constitute unfair methods of competition in violation of Section 5 of an Act of Congress entitled, "An act to create a Federal Trade Commission, to define its powers and duties and for other purposes," approved September 26, 1914.

Trains Operate by Signal Indication on the Paducah & Illinois

The entire railroad, involving five junctions and a bridge over the Ohio river, included in dispatcher-controlled system

By J. H. Schubert
Signal Engineer, Nashville, Chattanooga & St. Louis



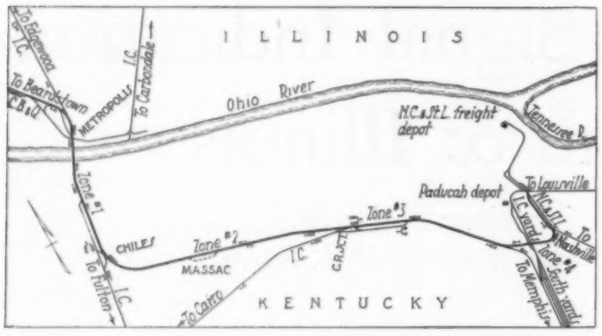
The Control Board at Paducah

THE Paducah & Illinois has recently placed in service an installation of the Union Switch & Signal Company's dispatcher-controlled signal system by means of which train movements are directed by signal indication on the entire railroad, that includes about 15 miles of single-track line involving a bridge over the Ohio river and five junctions with the several roads which use this bridge. The Paducah & Illinois, owned jointly by the Nashville, Chattanooga & St. Louis, the Chicago, Burlington & Quincy, and the Illinois Central, was organized to construct and operate the bridge across the Ohio river at Metropolis, Ill., as well as the connections with the existing lines at Metropolis and Paducah, Ky. The bridge over the Ohio river, as well as the piers, wing walls, etc., for the smaller bridges, were all constructed for two main tracks; however, only the one track was laid, and the line is operated as single track. The P. & I. property extends from the junction switches of the Illinois Central and the Burlington, just north of the station at Metropolis, to Paducah, about 15 miles, and is maintained by the N. C. & St. L., which has jurisdiction over the operation, although the trains of the other roads operate over this territory.

In tonnage, the most important single commodity handled over the P. & I. is coal from the Western Kentucky fields, while diversified manufactured and agricultural products also form an important percentage of the traffic. Four passenger trains, and from 40 to 60 freight trains are being operated over the bridge daily, and this number is to be increased following a rearrangement of schedules and the rerouting of through traffic over this bridge which forms an important link in the new cut-off of the I. C. from Edgewood, Ill., to Fulton, Ky.

The Operating Problem

The direction of trains was handled previously by time table, train orders and a manual block with an absolute staff system, the staff being used between Metropolis and Chiles, which territory includes the bridge. The dispatcher was located at Bructon, Tenn., and also handled the dispatching of trains on the Paducah & Memphis division of the N. C. & St. L.



Map of P. & I. Showing Signals and Zone Limits

Some of the trains were operated between Metropolis and Chiles, others between Metropolis and Paducah, while still others ran between Paducah and CR Junction, between CR Junction and South Yard, or bebetween Paducah and Metropolis. Difficulty in securing information as to the exact time of the arrival of trains at the different junctions, as well as the routes to be taken while on the P. & I., introduced numerous delays to trains before entering on the P. & I. tracks. Other delays were caused by the inability to make following moves in the absolute block between Metropolis and Chiles, where the electric staff system was in service. An operator was employed on each trick at Metropolis, Chiles, CR Junction and South Yard, while under the new method of operation, operators, known as train controllers, are required only at the control office in Paducah.

Improvement in the Track Arrangement

Under the previous track arrangement the only passing track was located at Massac, as shown dotted on the track plan, and this was long enough for only 71 cars, and could be used by trains on only the one route. It was located in a sag with an ascending grade of 0.3 per cent, opposing a train pulling out in either direction. In view of these conditions it was decided to eliminate this passing track so far as the operation of trains under the new system was concerned.

Under the old track layout, a train approaching a junction for movement over any route, blocked any movement over the same route from the opposite direction. As a result, almost all movements, particularly those between Metropolis, and Chiles, depended so much on the line-up of trains moving on the lines beyond the P. & I. property, that it was indeed difficult to prevent serious delays. Therefore, as a part of the new improvement, passing tracks were constructed at CR Junction and Chiles, and these are so located (as shown on the plan), that they can be used for the several routes involved, thus facilitating run-around or passing movements on the same or diverging routes. Number 18 turnouts were provided for all junctions and the ends of passing tracks, to permit train movements to be made at normal speed, thus reducing the time of occupying the main track.

Dispatcher-Controlled Signal System

With the new centralized controlled system, the junction and passing track switches are power operated by electric switch machines, and all train movements are directed by signals which are located at the proper clearance points, the whole layout being divided into five zones, on each of which train movements may be directed independently. Zone 1 extends from Metropolis to Chiles, Zone 2 from Chiles to CR Junction, Zone 3 from CR to South Yard, Zone 4 from South Yard to P. & I. Junction, and Zone 5 from P. & I. Junction to the end of the territory.

The control machine is located in the division headquarters building of the N. C. & St. L. which is close to the business section of Paducah, over two miles from the main line of the P. & I. The remote control of switches and signals at the 12 field stations is centralized in this board. The term "station" designates a group of associated devices, usually a switch and the opposing signals governing movement over the switch, which are controlled from one panel to the control board, each of which composes a section of the track model, a two-position switch lever, a three-position signal lever and a starting button arranged in order from top to bottom. One line circuit, comprising a single pair of wires, extends from the control office through each station in turn, and the operation of all functions is effected by suitably interrupting, or coding, the current in this circuit. The generating, transmitting, receiving and selecting of these codes are performed by relays, and for this reason, the system is called the "code relay" system. The control of any possible combination of functions is accomplished by sending but one code; the reception of but one indication operates or verifies the indications of all functions at the station.

The location and progress of trains are indicated on the illuminated track model, and are registered automatically by a train graph which is located in a compartment recessed below the level of the desk at the bottom of the control board. A glass cover over this train sheet can be slid down to permit the train controller to make notations and connect up the lines to form a graphic train sheet. This graph instrument has a pen for each of the 15 indicating points, which automatically records the "OS" of trains when arriving and departing at the corresponding locations over the territory. The graph paper is 16-in. wide and advances at the rate of 3 in. an hour.

Indication lamps on the control board repeat the indication of each signal and position of each switch. Normally, two lamps are lighted on each panel, a yellow

View Looking West at East End of Passing Track at CR Junction

switch-indication lamp, and if the track is occupied, a red lamp in the track model. If the track is clear and the signals are at stop, the track lamp is out and the red lamp above the signal lever is lighted. If the signal is clear, this red lamp is out and a green signal-indication lamp is lighted.

The Operation of the System

From the various dispatchers of the connecting lines, the train controller receives information by telephone as to the approximate time of arrival of trains approaching the P. & I. railroad at the various junctions, and he receives instructions as to the routes to be taken by each train. When the approach of a train is announced by the annunciator, the train controller informs the dispatcher, and is then instructed as to which movements are to be given preference, depending on the location and classes of other trains in the vicinity.

The switch and signal levers are normally on open circuit. The controller positions them according to the operations that he desires to perform and then presses the button, which starts the transmission of a code to select the station and panel. The control code includes a composite of the positions of both levers, and causes the station to send back an indication code as soon as the station operations are completed.

If the levers are not moved, the pressing of the starting button enables the controller to verify the indications without operating the station functions. In case the switch fails to complete its movement, a thermal cutout is operated to de-energize the route relay, and this in turn will open the motor circuit. As soon as this occurs, an indication code is sent back which contains no switch indication. The controller may send a new code restoring the switch to its original position.

Several starting buttons may be operated in rapid succession, and the codes will be sent out consecutively. The operation of a starting button extinguishes the switch indication lamp. On receipt of the return indication, the remaining light of the panel is momentarily extinguished and when the indication code is completed, two lights appear simultaneously.

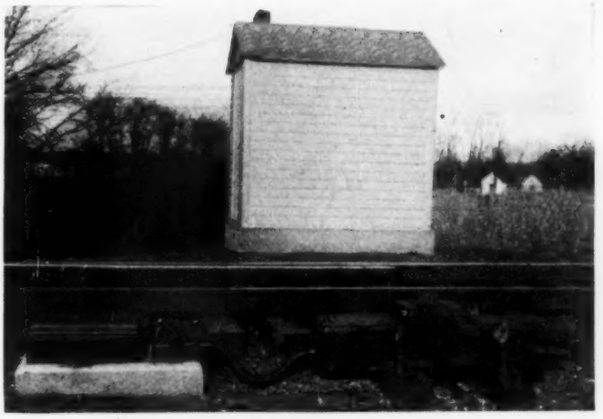
About six seconds is required to send out a code, and about the same time is necessary to permit the change of apparatus in the field, including the operation of the switch and signals at that location, while about six seconds is required to return the indication to the office. Therefore, approximately 18 seconds is consumed from the time the train controller pushes his button until he gets the return indication that the switch is over and locked, and that the signal is clear. This time is approximately six seconds shorter if no switch operation is required.

Outside Construction

The electric switch machines are the Union Style M-20 designed to operate the switches in 6 sec. For local switching moves, manual operation of the switch is provided for by the "dual selector." Movement of the selector lever to the "hand throw" position puts all signals at stop and sends an "occupied track" code, which is held until the selector lever is restored to the "motor" position.

The four switches in this territory leading to industry tracks are operated by switch stands, together with switch circuit controllers to provide the same protection as at any switch in automatic block signal territory, and, in addition, a pipe connected derail is used.

A 12-cell 120-a.h. DMG09 Exide storage battery is provided for each switch, and where there are two



A Power Switch Machine With One of the Instrument Houses in Background

switches such as at a crossover, a 16-cell battery is provided for the two switches. Power for operating the signals normally and for charging the storage batteries is provided by a 440-volt 60-cycle feed circuit carried on two No. 6 copper wires covered with weatherproof protection. The line control circuits for the signals, as well as the two wires for the code circuit, are No. 10 copper with weatherproof covering. All track circuit connections and underground runs from the relay housings to signals or to switch machines are made with Okonite parkway cable.

The installation was constructed by signal department forces of the Nashville, Chattanooga & St. Louis according to the plans and standards for signals and interlocking construction on this road.

* * *

The New Haven's "Knickerbocker Limited" at East Lyme, Conn.

New North Western, Class H, 4-8-4 Locomotive Built by Baldwin

North Western Gets Heavier Power

Modern 4-8-4 type locomotives are designed for long runs in heavy passenger and fast freight service

DURING the month of October, the Chicago & North Western received the first of 35 steam locomotives of the 4-8-4 type, known as Class H on the road, and notable for great weight, power and the application of many fuel economy accessories. Designed by the North Western mechanical department, in collaboration with The Baldwin Locomotive Works, and built by Baldwin, this modern locomotive develops a tractive force of 76,500 lb. at 250 lb., the boiler pressure at which the locomotives were working when received from the builder. The locomotive is designed, however, to carry 275 lb. with the proper factor of safety and, at this pressure, the maximum tractive force is 84,200 lb., including 12,400 lb. available with the Franklin trailer booster cut in. The locomotive in working order and the loaded tender together weigh 818,000 lb.

The new locomotives are used in long-run service on the Corn King Limited and 16 other daily trains between Chicago and Omaha, Neb., also on a number of fast freight runs. The provision of this power avoids the necessity of double heading heavy passenger trains in severe winter weather and permits handling these trains with much greater operating economy than formerly. With a large capacity tender, the only water stops between Omaha and Chicago, for example, are at division points such as Clinton and Boone, Ia., where regular stops are scheduled for other reasons.

The Class H locomotive is designed to develop high sustained horsepower at speeds and to achieve unusually good fuel performance. The locomotive is equipped with the Type E superheater and American multiple throttle, the Worthington Type S feedwater heater with the hot-water pump neatly located under the left front running board, and three Thermic syphons, two in the firebox and one in the combustion chamber. A modified Type B stoker is applied.

Other features of interest include the provision of a Commonwealth one-piece cast-steel bed frame with integral cylinders, a one-piece cast-steel water-bottom tender frame, and complete Alemite lubrication to all parts of the locomotive spring rigging, brake rigging, motion work, etc., except the main and valve crosshead guides The former is lubricated from a Detroit 8-feed, 16-pint force-feed lubricator, and the latter in the usual manner. Twenty-five of these locomotives are provided with tender trucks having the American Steel Foundries roller-bearing unit and Shafer roller-bearings. The trucks on all of the tenders are of the six-wheel type equipped with American clasp brakes, developed by the American Steel Foundries especially for use on locomotive tenders.

The boiler and machinery are designed for 275 lb. pressure. The boiler is of the conical design, the largest course being of 100 in. outside diameter and $1\frac{3}{16}$ in. thick. A long firebox, with total grate area of 100 sq. ft., is provided. The combustion chamber, 5 ft. long, increases the combined firebox heating surface to 408 sq. ft. The ash pan is of cast-steel construction.

The main locomotive frame, including the cylinders, frame cross-ties, valve gear and guide supports, and extension cradle for the trailer, bracket for feedwater pumps and train control equipment, is a one-piece steel casting 58 ft. 3 in. long over all, weighing 72,500 lb. It is the largest casting of this kind produced up to the time the Class H locomotives were built. The cradle

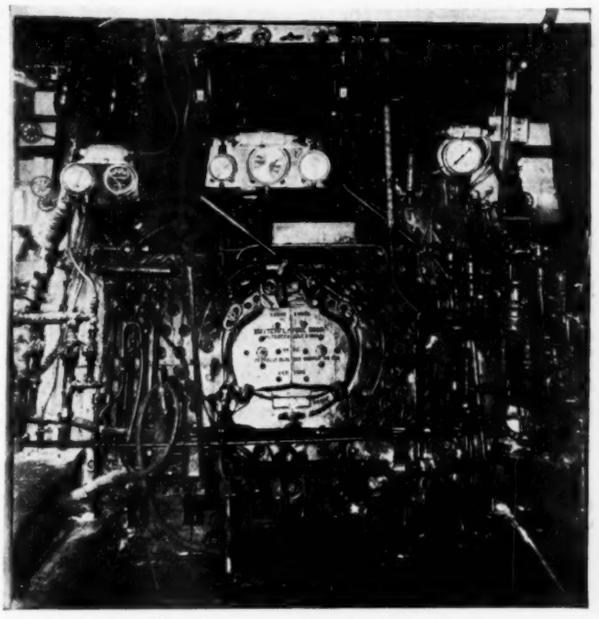
portion of this frame is of the outside design, which permits the largest possible ash-pan hopper capacity, and provides for the greatest slope of the sides of the ash-pan wings.

The cylinders are constructed with a high saddle, which is pocketed for the steam-pipe connection on the top of the saddle. This design eliminates the usual construction with the outside steam pipe passing through the smoke box, and which is difficult to maintain air-tight.

Power to drive the train control is taken from the right end of the front engine-truck axle. The air pump exhausts discharge from a separate channel cast integral with the smoke stack. The exhaust from the booster is passed by flexible piping to the tender tank where it is discharged into the tank, or to the atmosphere as desired. The outside journal bearing engine truck design is used.

Principal Dimensions of North Western 4-8-4 Locomotive

Builder	Baldwin
Railroad classification	H
Service	Heavy pass. and frt.
Cylinders, diameter and stroke	27 in. by 32 in.
Valve gear, type	5 Baker, 30 Walsch.
Valves, piston type, size	14 in.
Maximum travel	8 in.
Outside lap	1⅝ in.
Exhaust clearance	⅛ in.
Lead	¼ in.
Weights in working order:	
On drivers	288,000 lb.
On front truck	87,000 lb.
On trailing truck wheels	123,000 lb.
Total engine	498,000 lb.
Total tender	320,000 lb.
Total engine and tender	818,000 lb.
Wheel bases:	
Driving	20 ft. 6 in.
Driving (rigid)	13 ft. 4 in.
Total engine	48 ft. 7 in.
Total engine and tender	91 ft. 1 in.
Length over couplers	103 ft. 4 in.
Wheels, diameter outside tires:	
Driving	76 in.
Front truck	36 in.
Trailing truck, back and front	50 in. and 44 in.
Journals, diameter and length:	
Driving, main and intermediate	13½ in. by 14 in.
Driving, others	12 in. by 14½ in.
Engine truck	7½ in. by 14 in.
Trailing truck	9 in. by 14 in.
Boiler:	
Type	Conical
Steam pressure (working)	275 lb.
Fuel, kind	Soft coal
Diameter, largest course, outside	100 in.
Firebox, length and width	150½ in. by 96¼ in.
Combustion chamber, length	5 ft.
Tubes, number and diameter	51—2 in.
Flues, number and diameter	214—3½ in.
Length over tube sheets	21 ft. 0 in.
Grate area	100 sq. ft.
Heating surfaces:	
Firebox	292 sq. ft.
Combustion chamber	116 sq. ft.
Arch tubes and syphons	150 sq. ft.
Tubes and flues	4,656 sq. ft.
Total evaporative	5,214 sq. ft.
Superheating	2,357 sq. ft.
Combined evap. and superheating	7,571 sq. ft.
Tender:	
Style	Rectangular
Water capacity	18,000 gal.
Fuel capacity	20 tons
Wheels, diameter outside tires	36 in.
Journals, diameter and length	6½ in. by 12 in. (Roller Bearing)
Rated maximum tractive force, including 12,400 lb. from booster	84,200 lb.
Factor of adhesion (locomotive drivers)	4.01

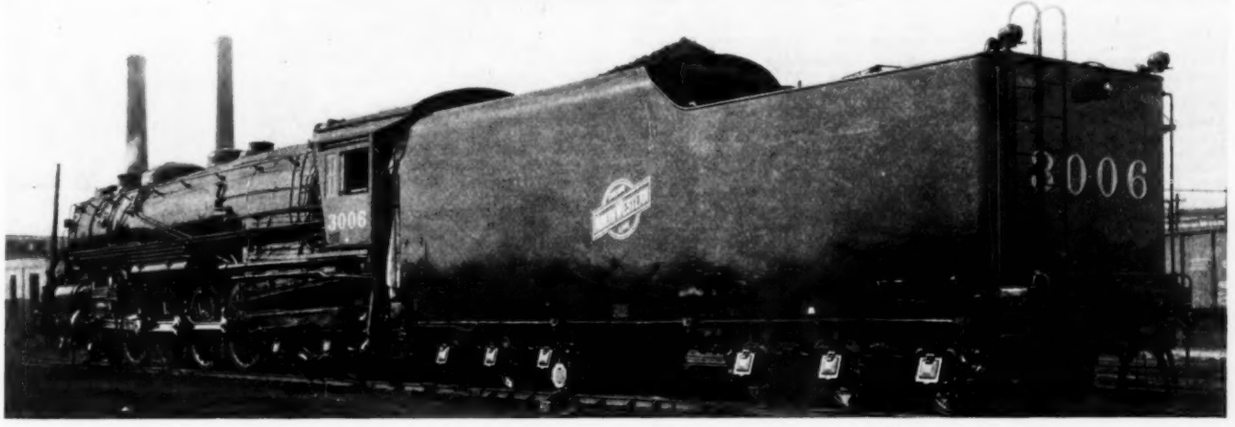


Interior View Showing a Carefully Studied Cab Arrangement

The main rods are of the tandem type. With this design of rod on an eight-coupled locomotive, the extension portion of the main rod forms the side rod between the second and third pairs of wheels, which eliminates the usual knuckle-pin connection in the side rods. Main and intermediate driving wheels are cross-counterbalanced. The crosshead shoes and the cylinder and valve bushings are of Hunt-Spiller iron

Five of the locomotives are equipped with Baker valve gears and 30 with Walschaert valve gears. All are equipped with Alco power reverse gears.

Detroit force feed lubricators provide lubrication for the main cylinders and feedwater heater pump, hydrostatic lubricators being used for the air pumps, stoker and booster. Grease plug lubrication is used for crosshead pins in all crank pins. The hollow main and intermediate crank pins provide grease pockets. Alemite



View from the Rear Showing the Welded Tender Construction and Application of American Steel Foundries Roller-Bearing Truck Unit

lubrication is used for driving box shoe and wedge faces, wheel hubs for engine-truck, driving and trailer truck wheels; also for throttle lever connections, power reverse gear, bell, etc. All of the driving journals are lubricated by means of automatic grease lubrication. Hoofer flange oilers are used on the front and back driving wheel tires.

An Elesco tangential steam separator is located in the top of the steam dome and connected to the dry pipe at that point. The water and wet steam from the steam separator is discharged by gravity to the atmosphere. The whistle, pneumatically operated, is located near the front end of the locomotive and takes its steam directly from the saturated steam side of the superheater header. This location makes the whistle particularly effective as a warning signal and, at the same time, less objectionable to the crew.

Slight Decrease in Carloading Anticipated

WASHINGTON, D. C.

SHIPPERS of the country, through estimates of the Shippers' Regional Advisory Boards, anticipate that carload shipments of the 29 principal commodities in the first quarter of 1930, will be approximately 7,664,499 cars, a reduction of 43,905 cars below the corresponding period in 1929, or only six-tenths of one per cent, the Car Service Division of the American Railway Association announces.

Of the 13 Shippers' Regional Advisory Boards, 5 anticipate an increase in their respective districts, compared with the same period last year, while 8 expect a decrease. In practically every instance, however, the variation, compared with the same period last year, is small. The five boards which estimate an increase over the same period in the preceding year are the Atlantic states, Allegheny, Ohio Valley, Central Western and Southwestern. Boards estimating a reduction are the New England, Great Lakes, Midwestern, Northwestern, Trans-Missouri-Kansas, Southeastern, Pacific Coast and Pacific Northwest Boards.

The estimates by the Boards as to what freight loadings by cars are anticipated for the 29 principal commodities in the first quarter of 1930 compared with the corresponding period of 1929 and the percentage of increase or decrease are as follows:

Board	Actual 1929	Estimated 1930	Per Cent of Increase or Decrease
Central Western	324,740	329,102	1.3 Increase
Pacific Coast	302,169	299,000	1.0 Decrease
Pacific Northwest	237,649	224,692	5.5 Decrease
Great Lakes	490,583	450,871	8.1 Decrease
Ohio Valley	1,121,483	1,122,937	0.1 Increase
Mid-West	1,220,164	1,209,666	0.9 Decrease
Northwest	246,895	242,242	1.9 Decrease
Trans-Mo.-Kansas	429,731	412,425	4.0 Decrease
Southeast	859,495	838,780	2.4 Decrease
Southwest	538,438	546,216	1.4 Increase
New England	166,321	160,407	3.6 Decrease
Atlantic States	775,570	782,712	0.9 Increase
Allegheny	995,166	1,045,449	5.1 Increase
Total	7,708,404	7,664,499	0.6 Decrease

Of the five boards which anticipate an increase in freight car requirements the Allegheny board ranks first due to the anticipated heavier movements particularly of coal, coke, petroleum and petroleum products, brick, and clay products. In the Atlantic States board territory, the increased estimate is due to the anticipated heavier movement of various commodities including coal and coke, petroleum and petroleum products; paper, paper board and prepared roofing; and in the Ohio Valley to grain; gravel, sand and stone; coal and coke; brick and clay products. In the Southwestern, the commodities particularly affecting the increase are grain; flour and other mill products; citrus fruits; ore and concentrates; gravel, sand and stone; cement, and sugar, syrup and molasses. In the Central Western the estimated increase is due to the anticipated heavier movement of grain; farm implements; potatoes; ore and concentrates; cement, and canned goods.

Of the boards reporting reductions in the anticipated freight car requirements for the first quarter, the estimate for the Great Lakes Board showed a reduction in shipments of automobiles, ore and concentrates, iron and steel, machinery and boilers, and live stock, although a substantial increase is expected in grain shipments. In connection with the anticipated reduction in shipments of automobiles, consideration must be given to the fact that the automobile industry in the first quarter last year was unusually active with the result that the demand for freight cars for the movement of automobiles in 1929 was above the average.

It is estimated that of the 29 commodities, increases in transportation requirements will develop for 15, as follows: flour, meal and other mill products; cotton seed and products, except oil; citrus fruits; potatoes; poultry and dairy products; coal and coke; salt, petroleum and petroleum products; sugar, syrup and molasses; cement; brick and clay products; agricultural implements and vehicles other than automobiles; fertilizers; paper, paper board and prepared roofing, and canned goods.

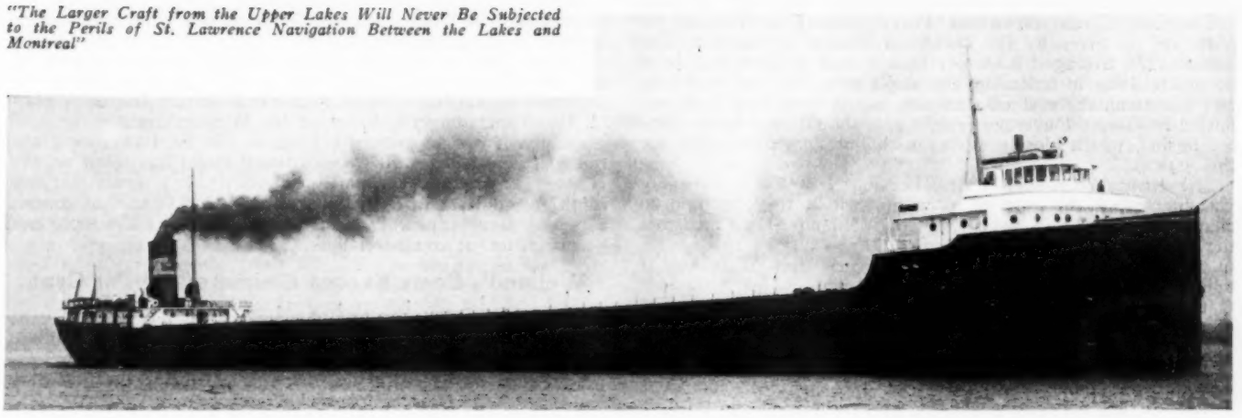
Commodities for which a decrease is estimated totaled 13, as follows: grain; hay, straw and alfalfa; cotton; fresh fruits except citrus fruits; fresh vegetables except potatoes; livestock; ore and concentrates; gravel, sand and stone; lumber and forest products; iron and steel; lime and plaster; automobiles, trucks and parts, and chemicals and explosives.

Freight car requirements for machinery and boilers are expected to be practically the same as those for the first quarter of 1929.

The estimate by commodities for the first quarter of 1930 compared with the same period in 1929 follows:

Commodity	Carloadings Actual 1929	Carloadings Estimated 1930	Estd. Per Cent Increase %	Estd. Per Cent Decrease %
Grain, All	365,114	348,409		4.6
Flour, Meal & Other Mill Products	235,609	239,144	1.5	
Hay, Straw and Alfalfa	84,622	83,921		.8
Cotton	66,927	62,235		7.0
Cotton Seed & Products, Except Oil	48,217	48,313	.2	
Citrus Fruits	46,751	47,753	2.1	
Other Fresh Fruits	46,304	42,175		8.9
Potatoes	63,970	64,660	1.1	
Other Fresh Vegetables	69,593	66,211		4.9
Live Stock	365,343	354,872		2.9
Poultry and Dairy Products	30,619	31,913	4.2	
Coal and Coke	2,825,398	2,903,720	2.8	
Ore and Concentrates	136,502	131,670		3.5
Gravel, Sand and Stone	383,439	381,582		.5
Salt	29,529	30,513	3.3	
Lumber and Forest Products	832,212	780,177		6.3
Petroleum & Petroleum Products	509,490	528,220	3.7	
Sugar, Syrup & Molasses	48,266	49,503	2.6	
Iron and Steel	539,582	514,868		4.6
Machinery & Boilers	48,894	48,913	..	..
Cement	109,444	113,102	3.3	
Brick and Clay Products	126,660	129,269	2.1	
Lime and Plaster	46,543	44,310		4.8
Agric. Implements & Vehicles, Other than Automobiles	30,235	32,445	7.3	
Automobiles, Trucks and Parts	285,313	246,746		13.5
Fertilizers, All Kinds	159,251	161,807	1.6	
Paper, Paperboard & Prepared Roofing	103,593	105,557	1.9	
Chemicals and Explosives	28,610	28,234		1.3
Canned Goods—All Canned Food Products (Includes Catsup, Jams, Jellies, Olives, Pickles, Preserves, etc.)	42,374	44,257	4.4	
Total All Commodities Listed	7,708,404	7,664,499		.6

"The Larger Craft from the Upper Lakes Will Never Be Subjected to the Perils of St. Lawrence Navigation Between the Lakes and Montreal"



St. Lawrence Project Condemned

Engineers report to Montreal Trade Board says present waterway not used to capacity—Cost estimates too low—Rate saving only two cents a bushel

TWO Canadian engineers, delegated by the Montreal Board of Trade to make a study and report on the proposed St. Lawrence Deep Waterway, have arrived at their conclusions, strongly opposing the project. The engineers are Henry Holgate and J. A. Jamieson. The Montreal Board of Trade, in making public their report, has not yet acted upon their recommendations.

The report bases its disapproval of the project on several facts, among them being the following: That existing water transport facilities on the St. Lawrence route are used to only a part of their capacity; that the proposed improvements could not effect savings in the cost of moving grain over costs via existing facilities to pay interest on more than a fraction of the capital expenditure involved; that strong doubts exist as to the continued growth of grain traffic eastward through the St. Lawrence Valley, by reason of the development of handling through Pacific coast ports, the development of the Hudson Bay Railway, the decline in United States export grain, etc.; that Lake vessels could not economically navigate tortuous river and canal channels.

The engineers mentioned among other things the following data upon which they based their findings:

In 1928 grain constituted 70 per cent of the total freight which passed through both the Welland and St. Lawrence Canals and is the principal commodity the transport cost of which will be appreciably reduced by the Welland Ship Canal or the proposed St. Lawrence Deep Waterway, if built.

St. Lawrence Route Already Well Developed

During the season 1928, 182,000,000 bushels of grain passed down through the existing Welland and St. Lawrence canals to Montreal and Quebec; 165,000,000 bushels of wheat were exported, and the balance for local mills, 70 per cent of this, was grown in Canada and 30 per cent in the United States.

Coal constitutes practically the only cargo which the grain-carrying ships can obtain for their westbound voyages from Lake Erie to Lake Superior grain ports, and there is practically no return cargo for the Canal S/S which transport grain from Port Colborne and Buffalo to Montreal and Quebec.

The Lake S/S are efficient, economic carriers of grain cargoes on the lakes, where they have plenty of sea-room, and the larger their cargo capacity, the lower their transport cost per bushel, but owing to their relatively great length to depth these large capacity ships could not safely cross the ocean and are not suitable vessels for navigating through Canal Locks, restricted or tortuous channels. The experienced owners, operators, navigators of these ships are the best judges as to this.

The Canal S/S of existing type, 250 ft. long, are suitable vessels for navigating the waterway, Port Colborne to Montreal, which consists of a series of lock-canals, lakes and river stretches in which there is considerable current. Their hourly operating cost per bushel of capacity is, however, relatively high, and to transport grain for the desired low or moderate freight rate they must be kept navigating from port to port with a cargo or going for one as high a percentage of the time as possible.

Time constitutes the essence of this Waterway transportation cost. The expense of these ships goes on each hour of the 220 day year, and the time taken to load, transport, unload a cargo and return for another, fixes the cost of transport per bushel and constitutes the primary factor in determining the freight rate.

The Welland-St. Lawrence 14 ft. Waterway has not, for the past several years, been efficiently utilized for transportation of grain. This has been almost entirely due to the undue detentions of the grain-laden Canal S/S in the Port of Montreal, which has increased the cost of transporting wheat by 0.97c a bushel average for the past four years and by 1.19c for the season 1928. This has caused a preventable waste in this port of $5,385,361.

Need for Better Terminal Facilities

This undue delay in unloading the Canal S/S is due to insufficient elevating and storage capacity to meet the normal requirements of the grain trade and to the lack of necessary equipment for rapidly, economically transporting from one elevator to another certain grades of grain which are often required to complete cargoes of Ocean S/S.

The elevators at Port Colborne have not sufficient storage capacity to provide for this choke of the grain spout, causing undue detention of the Lake S/S at this port, with resulting further increase of the cost of transport by 0.24c per bushel, making an increased cost of 1.43c per bushel, season 1928.

Wheat can be profitably transported by the existing Waterway Transportation System from Port Arthur to Port Colborne by Lake S/S and thence to Montreal by Canal S/S, including all elevator charges, for 6.99c per bushel, provided there be no undue delay in loading or unloading their cargoes.

The freight rate on wheat Port Arthur-Fort William to Montreal, as given by the Dominion Bureau of Statistics for season 1928, averaged 8.39c per bushel, and if there had been no undue delay in unloading the ship's cargo in Port Colborne and Montreal, the cost of transport would have been 1.43c per bushel less and the average freight rate should have beeen 6.96c per bushel, which closely agrees with our computed price for this service.

The Insurance Underwriters, London-New York, have not yet announced the rate of premium which they propose to charge the Lake S/S navigating the Welland Ship Canal and the Thousand Islands Channel, which are expected to be completed, or on those using the St. Lawrence Deep Waterway if built. We have, therefore, been compelled, in preparing our transport cost data, to assume rates likely to be applied in both cases—this we have done after consulting marine underwriting experts.

This assumption, coupled with the fact that the owners-operators of their Lake S/S, who are the most competent judges of their navigating hazard, while willing to run those of moderate size through the Welland Ship Canal are strongly opposed to their navigation through the Thousand Islands Channel, and would no doubt be even more strongly opposed to their passage through the St. Lawrence Deep Waterway, if built. These necessitate the use of the word "if" in the following paragraphs:

Saving in Rate Only Two Cents

When the Welland Ship Canal is opened for traffic, if the Lake S/S of 400,000 bushel capacity, length 550 ft., find it practicable to navigate through this maturing waterway down to the foot of Lake Ontario, and the insurance rate is not over 1¼ per cent, the cost of carrying the wheat Port Arthur to Kingston will be 3.36c per bushel and thence to Montreal by Canal S/S cost 2.86c. Total cost, including elevator charges and normal port time, will be 6.22c per bushel. The Welland Ship Canal will then effect a saving of 0.77c per bushel over the existing waterway.

When the Welland Ship Canal and the Thousand Islands Channel are both opened for traffic, if Lake S/S of 300,000 bushel capacity, length 480 ft., find it practicable to navigate down to Prescott and the insurance rate thereon be not over 4¾ per cent, the cost of transporting wheat Port Arthur to Prescott will be 3.86c per bushel, and from this port to Montreal by Canal S/S 2.54c per bushel, and total cost Port Arthur to Montreal including elevator charges and normal port time of the ship, will be 6.40c per bushel, and the saving effected by the Welland Canal will be 0.59c per bushel.

The St. Lawrence Deep Waterway, if built, would enable Lake S/S to transport grain from Port Arthur to Montreal without transshipment of cargoes en route, and if those of 300,000 bushels capacity, length 470 ft., found it practicable to navigate this waterway and the rate of insurance thereon did not exceed 6 per cent, their cost of transporting wheat would be 4.93c per bushel, and the saving effected thereby over the maturing Waterway Lake-Canal S/S would be 1.29c per bushel. This comparison is based on transshipment at Kingston.

Based on the above figures the saving in using the proposed Deep Waterways System over existing canals would be 2.06c per bushel.

From Port Arthur-Fort William to Elevator Bin Montreal:

			Cost per bu.	Saving
Via Existing canals	Tranship	Port Colborne	6.99c	
" Welland Ship Canal	"	Kingston	6.22c	.77c
" " " "	"	Prescott	6.40c	.59c
" " and proposed St. Lawrence Deep Waterway			4.93c	2.06c

The interest on costs of canals is not taken into account in these computations.

The Present Water Route

Describing the present water route the report reads in part:

The navigation system of the St. Lawrence must be considered as beginning at the head of Lake Superior and extending to tide-water navigation. The limit of draft of vessels between Fort William and Port Colborne (848 miles) is 19 feet. From Port Colborne to Lake Ontario (Welland Canal), the depth of channel will be 27 feet on completion of the ship canal in 1931. This depth will continue to Prescott (221 miles). From Prescott to Montreal (115 miles), navigation is in the river and canals, the depth being 14 feet, and at Montreal the navigation changes its character and becomes ocean navigation. That portion of the river from Lake Ontario to the 45th parallel of latitude, (below Cornwall), is the boundary between Canada and the United States, and below this point the river is entirely in Canadian territory.

The Canadian Government has expended on this system of navigation up to 31st March 1928, a total of $261,538,491. In the same period, the United States expenditure has been $44,721,319.69 including the locks on St. Mary's River.

Though it has no present bearing on the St. Lawrence grain route, it may be as well to note that Canada has spent on the Hudson Bay route (primarily intended as a grain-carrying route) up to 31st March 1928—about $28,000,000, and, of course, a further large expenditure must be made before the route can be made use of commercially.

Welland's Costs Exceed Estimates 140 Per Cent

The Welland Ship Canal, when complete, will probably cost $120,000,000, which with interest during construction (1913 to 1931) ($24,727,500), will amount to $144,727,500; (original estimate of cost $50,000,000) so that this will bring the Canadian expenditure in round figures on the entire route to $315,000,000, all of which has been or will be met by Canada, and includes navigation to the Sea.

Navigation on the present operating scale has been in successful operation for 28 years, and has met all demands of the traffic.

The existing canal system has never been taxed to its full capacity, and its present full capacity is not nearly its possible capacity, if the canal system were put into an efficient condition. This could be done at a comparatively small cost.

Mariners Condemn St. Lawrence Project

The report quotes at length from recommendations made by a deputation from the Canadian Marine Association to the Dominion Cabinet at Ottawa on the proposed terminal at the eastern end of Lake Ontario for grain carrying vessels from the head of the lakes which, when the new Welland Canal is completed, will be able to proceed to that point without trans-shipment. It had been proposed that, with the completion of a deeper channel through the Thousand Islands, these vessels would not have to terminate their voyages at the eastern end of Lake Ontario but could continue as far eastward in the St. Lawrence as channel depth would permit.

This view, however, the Marine Association repudiated. It held that the navigation of the St. Lawrence, even if deepened, by upper lake vessels would "be dangerous or impossible," because of the necessarily narrow channels hemmed in by granite, the frequency of fog and the impossibility of navigating through it, the slowness of navigation and the attendant increased costs, and many other unfavorable factors. The Marine Association contended that, even if a terminal were developed on the St. Lawrence beyond the eastern end of Lake Ontario, a terminal on the lake would nevertheless be necessary. "The larger craft from the upper lakes will never be subjected to the perils of St. Lawrence navigation between the Lakes and Montreal, and must be able to unload at the foot of free navigation in Lake Ontario if they are to use the New Welland (canal) at all."

Continuing the report says:

We consider that these facts (i. e. the report of the Marine Association and other interested parties) are of the utmost importance, and that by spending a comparatively small amount of money on the present canal system every need will be satisfied, and that the vast expenditure on a new system is quite unnecessary.

Primarily a Grain Route

The movement of grain by the St. Lawrence route provides the bulk of freight (85 per cent) by this route. The St. Lawrence is primarily a grain route and owing to the rapid development of the Western Provinces in grain growing, the quantity handled at Montreal each year has grown to the present quantity of 211,295,379 bushels, handled by water and rail in 1928. Of all grain reaching the head of the Lakes, 40.5 per cent reached Montreal, in 1928.

In considering this question of growth of quantity annually transported, the fact must be recognized that a continuous in-

crease in quantity cannot be expected, at least on the scale of progression in former years.

Though the wheat growing area may increase, the means of handling the product have undergone changes, and further changes may be expected, which may divert the grain from the St. Lawrence route.

Westward Grain Movement Increases

In 1923-24, 663,017 bushels were shipped from Vancouver, and in 1928 the quantity increased to 97,394,434 bushels, showing a very material increase. This movement of grain westward must permanently affect the grain movement in the Province of Alberta and a part of Saskatchewan, and will include the Peace River area which is opening up. In addition to the Vancouver route, there is the possibility of the Hudson's Bay route, on which so many in the West are looking for relief; just to what extent this may prove to be an economic route remains to be proved, but it is as well to keep this in mind at present.

In the "crop year" ending 31st July 1929, Vancouver elevators handled 95,407,552 bushels.

The increasing consumption of wheat in the Orient is a factor to be considered, and this comparatively new market is expected to create a very large movement in that direction, especially for the lower grades of wheat, and Vancouver is anticipating this movement by increasing its elevator capacity on a scale which a few years ago would have been considered unnecessary.

There is also the question of world grain supply to be considered, and with many countries increasing production, and others that while lying dormant for some years may become more active producers and possible exporters, it is as well not to place too high a value on increased grain quantities reaching the St. Lawrence route for export, and it may be that the peak has been reached. The problem is one which cannot now be solved, but it would be unwise to try to persuade ourselves that the growth of the grain trade has no limits. The serious congestion in Montreal Harbor in May of this year also shows how market conditions may effect transportation. The United States is gradually reaching the point when it will practically cease to be an exporter of wheat, as the crop will be required to feed its own population, which is rapidly increasing, so that American grain may soon use the St. Lawrence route less than before.

St. Lawrence Navigation Not New

In many discussions of the St. Lawrence River Project, especially from American sources, this work is referred to as if it were a new route for grain from the West, and many writers have ignored the fact that the existing canals have provided for about thirty years a very satisfactory route for the carrying of all the grain that has been offered for transport. It now is quite evident that these canals have never been used up to their capacity, and it is not at all certain that the canals will be called on to carry more than they have already carried; at any rate, expansion of grain exports is not likely to increase at the rate they have in previous years, while this trade was being built up.

The traffic in 1928 was 7,321,348 tons, and the capacity of present canals is stated to be 12,000,000 tons, thus providing for an increase of over 50 per cent with present facilities.

It is a fact that the western grain reaching Chicago is mostly carried east by railway, and that the lakes and canals carry the remainder, and what has already proved to be a commercial fact will likely continue for economic and seasonal reasons, so that a 50 per cent increase over the 1928 tonnage may be very problematical.

This is emphasized by the grain-growing situation the world over, and by the development of newer grain-carrying routes, and the decreasing exports of United States grain, all tending to direct attention to serious consideration to any enlarged scheme of navigation on the lake route and calling preferably for the more efficient use of present facilities rather than their abandonment for something larger that probably will never be used up to its capacity or possibilities, and will represent only a huge outlay for no practical purpose.

Testimony of the manager of the Shipping Federation of Canada is quoted in part as follows:

Since the publication of the report of the Joint Board of Engineers in November, 1926, it had given careful study to the St. Lawrence question and had investigated particularly the possible economic benefits which would accrue to Canada as a result of ocean vessels proceeding beyond Montreal to the Great Lakes. Its attitude towards the proposed waterway was not actuated by any spirit of factious opposition to further St. Lawrence improvement, nor was it based on the interests of any particular or local port. The immense expenditure involved in the proposed undertaking could only be justified by commensurate benefits to the country. During 1926, 96 per cent of the Canadian through-traffic eastbound through St. Lawrence Canals consisted of grain, so that the proposed expenditure could only be justified by commensurate reduction in the cost of grain transportation.

American Claims Extravagant

Extravagant claims, principally American, had been made as to the possible saving—claims varying from 6c to 10c per bushel. The Federation had given special consideration to the possibility of ocean vessels proceeding beyond Montreal to the Great Lakes ports, and in their opinion the only ocean-going vessels that would use the proposed waterway were the transient, or tramp vessels, carrying bulk cargoes, and only a proportion of these could, when fully loaded, utilize the 27 ft. channel between Montreal and Lake Ontario. Cargo space is a commodity equally with grain itself, and rates for its use are governed by the law of supply and demand. To meet the extra expense and risks involved in proceeding beyond Quebec and Montreal, proportionately higher rates would have to be charged

Calculations based only on distance and time of travel would indicate a maximum saving as compared with existing all-water rates on the St. Lawrence of 2c to 3c per bushel, but the seasonal character of the traffic, the very short period during which grain could be moved by ocean vessels direct from the head of the Lakes, and the dependence of tramp rates and the supply of tramp vessels on world wide traffic conditions would necessarily be reflected in the actual rates. The absurdity of exorbitant claims of savings, as high as 10c per bushel, is evident from the fact that in order to effect such a saving a tramp vessel would have to travel 1,200 miles beyond Montreal and 1,2000 miles back to Montreal and charge 2c per bushel less for the carriage of her cargo from the head of the Lakes to Liverpool than this class of vessel charged for the carriage of a similar cargo from Montreal to Liverpool during the past season of St. Lawrence navigation.

Nothwithstanding Canada's favorable position for imports by water from trans-oceanic countries, about 65 per cent of our total imports come from the Middle Western States and in this connection no benefit would accrue to Canada from the deepening of the St. Lawrence.

American traffic available for the deeper waterway is also available for the present waterway—the cheapest of all means of transportation being the Middle Western States and the Atlantic seaboard. It is surprising, therefore, that this route has not been utilized to a greater extent by American territories tributary to the Great Lakes, though American vessels may make use of the entire system free of canal tolls.

Cost Estimates Too Low

Referring to the 1926 cost estimates of the Joint Board of Engineers the report says:

"We desire to say, in regard to these estimates, that they are not contractors' estimates, and we venture the opinion that the allowance for contingencies has not been liberal enough. The river is one of the largest in the world, and the quantities of water to be handled are unprecedented; the construction must be spread over several years, and the works during progress will be subjected to such trying conditions from water and ice, and on such a large scale as we have no precedent to guide in making estimates of the cost of such enormous sub-aqueous works as are demanded, so that although no doubt the Joint Board of Engineers gave this phase consideration, yet we are convinced that the costs of the work will be substantially in excess of the figures given in the report, and further than this, we do not think anyone can say what greater sum will be required, as there is no accurate information to safely guide in making such an estimate.

"The Welland ship Canal estimated to cost $50,000,000 has already cost over $100,000,000, and the uncertain factors in the St. Lawrence render it undoubtedly liable to a very large increase in cost over the estimates. None of these works offered the immense contingencies that the St. Lawrence river presents.

"The division of costs as between water power and

navigation is difficult to arrive at, as some of the major works are equally necessary to both purposes, and the charge to navigation will probably be found to be greater than estimated when a clear adjustment of figures is arrived at. It must also be noted that interest on cost during construction has not been included in the present demands, and also for a very great growth of traffic in future, the reasonable doubt existing as to the progressive increase in volume of eastern moving grain and no immediate necessity existing to provide for greater facilities than now exist and in immediate prospect of completion, and power development being in no

Statement Showing the Relation of Annual Costs in Transport to Capital Investment, Based on Present and Assumed Future Volume of Through Freight

Freight carried in 1928 Estimated future quantities	Assumed capital expenditure including interest on construction Lake Erie to Montreal, Welland Canal $144,727,500; St. Lawrence R. $218,831,250	Interest on capital at 4.7% per annum	Interest charge per ton on total freight, being an additional charge over present cost per ton	Annual saving effected by proposed new works, based on saving on grain of 2.06c per bushel =73.66c per ton, not including interest on investment	Annual loss in freight carrying = Interest charge less saving	Capital expenditure justifiable by saving in freight carrying, if no interest is charged = annual saving capitalized at 4.7% per annum	
1928—7,321,348 tons including 182,000,000 bu. grain—5,089,553 tons. tons							
Eastward freight.....6,109,729							
Westward freight.....1,211,619	$363,558,750	$17,087,261	$2.334	$5,392,904	$11,694,357	$114,742,638	This is less than the cost of the Welland Canal, not including interest during construction.
Assume 200,000,000 bu. of grain =5,593,000 tons. tons							
Total through freight...8,047,482							
Eastward freight.....6,715,623							
Westward freight.....1,331,859	$363,558,750	$17,087,261	$2.123	$5,927,775	$11,159,486	$126,122,872	
Assume 250,000,000 bu. of grain =6,991,250 tons. tons							
Total through freight..10,059,352							
Eastward freight.....8,394,529							
Westward freight.....1,664,823	$363,558,750	$17,087,261	$1.698	$7,409,718	$9,677,543	$157,653,574	
Assume 300,000,000 bu. of grain =8,389,500 tons. tons							
Total through freight..12,071,224							
Eastward freight.....10,073,436							
Westward freight.....1,997,788	$363,558,750	$17,087,261	$1.415	$8,891,663	$8,195,598	$189,184,319	This is about half the cost of navigation works Lake Erie to Montreal, as estimated.

Average weight of grain carried is 55.93 lbs. per bushel.

The above assumes that general freight traffic, both east and west, increases in the same proportion as the grain increases, and the saving on all freight carried is at the same rate as the saving on grain. The expenditure on the Welland Ship Canal will not be justified until the quantity of grain carried through to Montreal is about 250,000,000 bu. per annum.

The capital cost of the St. Lawrence Deep Waterways will in all probability be greater than $218,831,250, and the resulting figures will then show more unfavorably towards the project. The larger the tonnage carried, the larger the justifiable expenditure will be, but it is not at all probable that the tonnage will ever exceed 12,000,000 tons, so that the capital expenditure proposed is in no way warranted.

estimates, and as the work would extend over say ten years, and assuming money at 5 per cent, the estimates should be increased approximately by $\frac{10}{2} \times 5 = 25$ per cent, thus increasing the cost by this amount of interest—being interest on total costs for half the period of construction.

"The power potentialities of the river are 5,103,100 horse power, of which 2,903,100 h.p. is entirely in Canada, and Canada is entitled to one-half, or 1,100,000 h.p., of the International Section, so that Canada owns 4,003,100 h.p., while the United States share is 1,100,000 h.p. of the potential power development of the river in the International Section.

"The development of navigation and of power are so intimately connected that it is difficult to apportion the proportion of cost to each. The necessary dams to provide navigation are equally necessary for power development, and in this lies a very large proportion of the costs, including the heaviest charge for contingencies.

"The conditions are further complicated because of the uncertainty of the ownership of the power, as to whether the Dominion or the Provincial Governments are owners of the power which may be developed in navigable rivers."

Conclusions

The report considers the aspect of power development and its relation to the entire project and draws the following conclusions:

"The present canal system, combined with the Prescott terminal, providing as it will ample facilities for all way contingent on expansion of navigation, for these reasons we can see no sound argument in favor of the expenditure on a deep waterway below Prescott, as all economic features point decidedly against Canada entering on any such scheme."

Findings Apply With Greater Force to U. S.

These are the conclusions as respecting Canadian traffic. They apply even with greater force to United States traffic, as its volume is much less than the Canadian, and it is subject to the same economic laws.

The Canadian contribution to St. Lawrence navigation has already amounted to a very large sum, and Canada has a very large investment in railways, which have added so much to the national wealth. It is proper that the railways should share in the grain-carrying trade as much as possible, and the assistance the railways can give to the grain-carrying between Prescott and Montreal will be of great value.

The whole deep waterways scheme is one which Canada should not at present encourage in any way, as it is an uneconomic proposition, and neither this nor future generations should be embarrassed with such a huge and unnecessary encumbrance.

An appended table shows estimated transportation costs related to capital investment.

ALL THIRD-CLASS CORRIDOR CARS and all dining cars of the Great Western of Great Britain are being redecorated in an entirely new color scheme. Upholstery will be gray and black with gray predominating; floors will be gray with black borders; ceilings will be enamelled white, and panelling will be in walnut color. This scheme makes the compartments lighter and more cheerful than the old colors of red, black and brown. Seats are also to be made ½ in. wider, and arm rests will be lowered one inch. The exterior of the coaches will remain as at present, chocolate and cream.

Pullman to Acquire Standard Steel Car and Osgood Bradley

Plans for merger recommended by directors will soon be submitted to stockholders for approval

MEETINGS of the stockholders of Pullman Incorporated, the Standard Steel Car Company and the Osgood Bradley Car Company will be held shortly to pass upon a plan recommended by the boards of directors of the three companies, under which plan the properties of the Standard Steel Car Company and its subsidiaries and of the Osgood Bradley Car Company will be acquired by a newly incorporated subsidiary of Pullman Incorporated, wholly owned by it, but to be operated as a group separately from the properties of its present manufacturing subsidiary, the Pullman Car & Manufacturing Corporation. The fixed property to be thus acquired by Pullman Incorporated is to be paid for in the stock of that corporation, and the miscellaneous assets are to be acquired for cash or its equivalent.

It is contemplated that, upon the consummation of the plan, J. F. Drake, president of the Standard Steel Car Company will become chairman of the board of Pullman Incorporated, the president of which is D. A. Crawford who is also president of the Pullman Company. P. H. Joyce, vice-president of the Standard Steel Car Company, and former president of the Illinois Car & Manufacturing Company, will become president of the new Standard-Bradley group. C. A. Liddle will remain as president of the Pullman Car & Manufacturing Corporation.

Upon the consummation of the plan, Pullman Incorporated will own all of the stock of each of two manufacturing corporations to be operated as separate units, viz:

1. A new company which will have acquired and will operate the plants for the manufacture of railway passenger and freight cars, street railway cars, steel forgings, grey iron castings, etc., now owned by the Standard Steel Car Company and subsidiaries and the Osgood Bradley Car Company and located at the following places in the United States and foreign countries: Butler, Pa., Hammond, Inc., Baltimore, Md., St. Paul, Minn., Richmond, Va., Worcester, Mass., Sagamore, Mass., Ellwood City, Pa., La Rochelle, France, and Rio de Janeiro, Brazil, and in addition, sales offices in New York, Chicago, Pittsburgh, St. Paul, Baltimore, Richmond, London, Paris, Rio de Janeiro, Sao Paulo, Buenos Aires, and Cape Town, South Africa; and

2. Its present subsidiary, Pullman Car & Manufacturing Corporation, which will continue to operate its plants located at Chicago, Ill., Michigan City, Ind., Birmingham, Ala., New Orleans, La., and Houston, Tex.

Pullman Incorporated will continue its stock ownership of the Pullman Company, the corporation which operates the Pullman car system.

There will be added to the board of directors of Pullman Incorporated, R. K. Mellon, vice-president of the Mellon National Bank, Pittsburgh, A. M. Scaife, vice-president of W. B. Scaife & Company, Pittsburgh, and Mr. Drake.

James F. Drake

The officers of the Standard-Bradley group in addition to Mr. Joyce as president, will be: R. L. Gordon, vice-president at New York, formerly vice-president of Standard; P. G. Jenks, vice-president at Chicago, formerly vice-president of Standard; W. V. McKee, vice-president at Worcester, formerly vice-president of Osgood Bradley; C. F. Stembel, vice-president at Minneapolis, formerly vice-president of the Siems-Stembel Company; J. C. Snyder, vice-president at Richmond, Va., formerly vice-president of the Richmond Car Works; C. W. Wright, vice-president at Pittsburgh, formerly vice-president of the Steel Car Forge Company; and William Bierman, secretary, formerly secretary of Standard.

James Frank Drake was born September 1, 1880, at Pittsfield, N. H. He was graduated from Dartmouth College with the degree of A. B. in 1902, and from Amos Tuck School of Administration and Finance (of Dartmouth) with the degree of Master of Commercial Science in 1903. After completing his studies, he served as secretary of the Board of Trade at Springfield, Mass., until 1908 when he became secretary of the Phelps Publishing Company, Springfield. In 1914 he was appointed treasurer and a director and held that office until May, 1918.

During his residence in Springfield he was actively identified with many business interests and took a prominent part in the public affairs of that city. He held numerous public offices and on May 10, 1918, was commissioned as major in the Ordnance Department of the United States Army reporting for active duty in June, at Washington, D. C. Shortly thereafter he was sent to Pittsburgh, Pa., as commanding officer of the Finance Division of the Pittsburgh district ordnance office. In December, 1918, he was appointed a member of the Claims Board of the Pittsburgh district which had charge of all of the ordnance contracts cancelled in that district when the armistice was declared. On March 25, 1919, he was promoted to the rank of lieutenant-colonel and in the following June was honorably discharged from the service. Mr. Drake then served as a civilian member of the same board, acting in an advisory capacity until December 3, 1919, when its work was completed. In June, 1919, he became assistant to the president of the Gulf Oil Corporation with headquarters at Pittsburgh, Pa. In January, 1923, he became vice-president and in November of the same year, president of the following companies with headquarters at Pittsburgh: Standard Steel Car Company; Baltimore Car & Foundry Co.; Middletown Car Company; Butler Bolt & Rivet Co.; Butler Car Wheel Company; Forged Steel Wheel Company; Standard Motor Truck Company; Steel Car Forge Company; Standard Car Finance Corporation; Richmond Car Works, Inc., and Keith Car & Manufacturing Co. and Siems-Stembel Company. These companies are controlled by the Mellon interests of Pittsburgh. Mr. Drake is also vice-president and director of the Pittsburgh Equitable Meter Company, Pittsburgh, Pa.; and a director of the Osgood Bradley Car Company, Worcester, Mass.; the American Rolling Mill Company, Middletown, Ohio, and the Lilpop, Rau & Lowenstein, Warsaw, Poland.

Freight Car Loading

WASHINGTON, D. C.

COMPLETE reports show that 52,789,789 cars were loaded with revenue freight in the 52 weeks ended December 28, 1929, exceeding the record of all previous years, except 1926, when there were 53,098,819 cars, an increase of 309,030 or .6 per cent above the total for 1929. The number of cars loaded was an increase of 1,199,902 cars, or 2.3 per cent, above 1928, and an increase of 1,153,983 cars, or 2.2 per cent above 1927.

Loading exceeded one million cars in 28 separate weeks in 1929, compared with 24 weeks in 1928. In 1927 there were also 28 weeks in which loading exceeded one million cars.

Total loading by commodities for 1929 compared with 1928 was as follows:

	1929	1928
Grain and Grain Products	2,394,459	2,512,937
Live Stock	1,418,949	1,520,915
Coal	9,232,429	8,768,487
Coke	627,546	533,716
Forest Products	3,250,794	3,327,270
Ore	2,281,288	1,909,766
Merchandise less than Carload Lot Freight	13,200,440	13,165,573
Miscellaneous Freight	20,383,884	19,851,223

For the week ended on December 28, loading amounted to 638,445 cars, a decrease, due to the Christmas holidays, of 204,038 cars compared with the preceding week. It also was a decrease of 29,529 cars compared with the corresponding week in 1928 and a decrease of 42,109 cars under the same week in 1927.

The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, December 28, 1929

Districts	1929	1928	1927
Eastern	151,256	156,723	157,962
Allegheny	135,748	142,386	139,563
Pocahontas	30,555	28,172	33,643
Southern	86,139	91,051	102,699
Northwestern	76,603	79,355	82,994
Central Western	104,955	109,658	104,577
Southwestern	53,189	60,629	59,116
Total Western Districts	234,747	249,642	246,687
Total All Roads	638,445	667,974	680,554
Commodities			
Grain and Grain Products	31,557	37,091	36,024
Live Stock	17,220	21,499	22,154
Coal	137,659	119,095	141,332
Coke	10,687	10,271	9,372
Forest Products	27,806	32,808	35,219
Ore	6,407	8,378	6,682
Merchandise L.C.L.	187,210	192,853	192,232
Miscellaneous	219,899	245,979	237,539
December 28	638,445	667,974	680,554
December 21	842,483	900,620	829,810
December 14	923,240	963,668	868,750
December 7	936,825	984,773	877,676
November 30	837,107	900,556	918,487
Cumulative total, 52 weeks	52,789,789	51,589,887	51,635,806

Week Ended Saturday, December 21, 1929

Districts	1929	1928	1927
Eastern	183,062	203,162	184,510
Allegheny	174,877	187,284	164,378
Pocahontas	57,359	54,618	45,975
Southern	132,076	140,135	130,796
Northwestern	95,797	100,565	102,512
Central Western	128,880	137,729	131,379
Southwestern	70,432	77,127	70,260
Total Western Districts	295,109	315,421	304,151
Total All Roads	842,483	900,620	829,810
Commodities			
Grain and Grain Products	36,167	43,175	45,013
Live Stock	24,410	26,318	23,886
Coal	202,470	192,018	176,696
Coke	11,087	10,662	9,944
Forest Products	48,727	58,329	53,116
Ore	8,794	10,945	8,171
Merchandise L.C.L.	228,484	242,578	236,043
Miscellaneous	282,344	316,595	276,941

The freight car surplus for the week ended December 23 averaged 393,345 cars, an increase of 25,688 cars as compared with the preceding week. This included 222,212 box cars, 120,250 coal cars 27,057 stock cars and 11,739 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended December 28 totaled 41,504 cars, a decrease from the previous week of 12,575 cars and a decrease from the same week last year of 2,782.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
December 28, 1929	41,504	31,817
December 21, 1929	54,079	32,101
December 14, 1929	57,901	36,550
December 29, 1928	44,286	31,318
Cumulative Totals for Canada		
December 28, 1929	3,524,019	2,087,948
December 29, 1928	3,695,415	2,045,578
December 31, 1927	3,396,797	1,918,773

* * *

On the Central of New Jersey

American Business Reaps Benefits from Improved Railway Service

Expedited freight movement has enabled commerce and industry to effect tremendous savings through inventory reductions and in other ways

Part 1

LETTERS received by *Railway Age* from a hundred large concerns, engaged in almost every line of industry and commerce in the United States, show that the benefits derived by general business from the improvements made in railway freight service within recent years have been much greater and more varied than any information heretofore assembled has indicated. A questionnaire recently sent out by *Railway Age* brought in these letters.

The unanimity with which business leaders in their statements agree as to the extent of the improvement in railway service, and as to the magnitude of the benefits which general business has derived from it, constitute a very remarkable tribute to railway management.

As was to have been expected, the greatest emphasis is placed by the writers of these letters upon the reductions of inventories which the increased speed and regularity of freight service have made possible. The total inventories, including fuel, raw materials and finished products, carried at any given time by all classes of business concerns, aggregate, of course, many billions of dollars. It is not possible from the information available to estimate the amount of these inventories before the great improvement of freight service was begun in 1923, or the total reduction that has since been made; but it is evident that the aggregate reduction has amounted to a good many billions of dollars. Experts have estimated that the annual cost of carrying stocks of various kinds averages about 25 per cent of the investment in them, and consequently for every billion dollars of reduction in inventories that has been accomplished there has doubtless been effected a saving in the cost of conducting business of approximately 250 million dollars per year. This reduction of inventories has, of course, released for other purposes the money formerly tied up in them, and therefore has been equivalent to a large increase in the country's capital that can be used for productive purposes.

Practically every letter received referred specifically to this reduction in inventories, and some stated definitely the amount of the reduction. The figures for inventory reduction range from a minimum of 15 per cent to a maximum of 75 per cent, with the average at about 40 per cent. In some instances these inventory reductions were accompanied by increase in net sales that ranged as high as 300 per cent. An outstanding example of savings occurred among oil companies owning or leasing tank car equipment. It was estimated

by them that the average tank car is today transporting approximately the same amount of oil and oil products for the transportation of which two cars were required six years ago.

As important as it has been, the reduction of inventories through improved transportation is by no means the only benefit attributed by business leaders to improved railway service. Among the others specifically mentioned in the letters received by *Railway Age* are the following:

The release of capital "frozen in transit," through reduction in the time necessary to place shipments in the hands of the consignee, and the consequent speeding up of payments due to the shipper.

The release of capital invested in tank car equipment in the oil industry, and in containers for transporting such commodities as beverages and milk and other liquids through the increase in the number of miles moved per day by tank cars and containers.

The reduction of operating expenses in manufacturing plants, and the stabilization of labor forces, through the more accurate scheduling of operations, resulting from the dependability of railway service.

Savings effected by shipment by freight where formerly it was found necessary to ship by express in order to make proper delivery and savings resulting from the elimination of shipping by express in cases where freight shipments were delayed enroute.

The lowering of distribution costs through the general expedition of freight service and the improved cooperation between the shipper and the railroad. Improved service has resulted in an almost complete elimination of tracing clerks and carload shipment riders.

Reduction of demurrage charges because of the regularity of arrival of shipments on scheduled time.

The receipt of merchandise in better condition than formerly, resulting in a reduction of loss and damage claims.

Increased volume of sales in retail stores due to quicker delivery of merchandise.

The widening of potential markets through the speeding up of distribution.

The more advantageous allotment of purchases by the enlarging of the field from which supplies may be drawn.

The checking of violent fluctuations in the price of coal through the elimination of car shortages and the concentration of production at the most economical mines through the closing of those which were operated merely to receive their quota of cars.

The reduction of the expense to the manufacturers of heavy machinery of assembling in the field, owing to the provision by the railroads of special rolling stock for handling such machinery.

Relieving the shipper of the uncertainty caused by frequent and unexpected changes in the rate structure, through the ability of the carriers to obtain a profit with the existing rate structure by improving their operating efficiency.

The improvement in the efficiency of business executives through their ability to cover more territory in more comfort owing to improved passenger service.

Some of the Evidence of Improved Service

The benefits resulting from the reduction of inventories, as indicated by the letters received, were most pronounced among the manufacturers whose raw product comes to them in a semi-finished state, such as manufacturers of automobiles and producers of machinery, and among the operators of retail stores. At the same time the concerns whose product is received in the semi-finished state for further manufacturing before it is placed upon the market, reported a variety of benefits touching practically every phase of their operations, some only indirectly dependent upon transportation service.

How the Automobile Industry Benefited

Among the expressions received from automobile manufacturers were the following:

Alvan Macauley, President, Packard Motor Car Company.—Although the Packard Motor Car Company manufactured 13,758 vehicles in 1922 and 53,224 during the 1928-29 fiscal year, inventories in this last fiscal year were considerably less than they were in 1922. Improvement in railway transportation service had a great part in making this possible.

We have found that materials are moving faster by rail now. They are not being held up in terminals and loaded cars are no longer going astray. We now can depend upon the railroads for delivery. This dependability of service has been an incalculable aid to the entire automotive industry.

In former years when there was considerably less assurance of the maintenance of freight schedules, it was necessary to maintain very much greater stocks of materials in our factories so that we might be sure that we had them when needed. Now, to illustrate, we know that goods which might be ordered shipped from Chicago Monday morning will be on our tracks at the opening of business Friday morning.

Ability to move products out of our factories promptly and to place them in the hands of distributors and dealers promptly has meant perhaps as much to us as the opportunity of decreasing our inventories. Automotive vehicles are sold by their manufacturers on a sightdraft bill-of-lading basis. Prompt handling by the railroads which now has become the rule has meant a speeding up in the release of capital "frozen" through products in transit.

There were times also in former years when we were unable to get cars to move products. This sometimes meant millions of dollars in capital tied up with no return. It meant also that we could not give to customers the promptness of service so much to be desired.

A. Parr, Traffic Manager, Nash Motors Company.—Consistent effort on the part of the management of American railroads for the past five years has shown a gradual improvement in transportation and is now nearing a recognizable point of dependability which is very essential to the success of American industry and business. Keen competition necessitates that business be in the one hundred per cent class, and to accomplish this every part of the organization and machinery in connection therewith must work in unison, and naturally the transportation of materials in and finished products out must play its proper part to prove thoroughly successful to any business.

The old system of carrying large inventories of materials on hand is obsolete excepting on such commodities as can only be secured and handled in their season or that may have fluctuating market values. In summing up the proposition it can be stated, without fear of contradiction, that our present standard of transportation has reached a point which results in the saving of an enormous sum of money yearly to industry and business that previously, owing to its inactiveness, could have been termed as going to waste.

A. R. Erskine, President, Studebaker Corporation.—Railway service given Studebaker since 1922 shows marked improvement in every particular. Freight deliveries are made within from 40 per cent to 50 per cent of the time previously required, both in carload and less than carload shipments. Speedy action has

replaced slowness. Consequently, investments in inventories of manufacturers and merchants are much less, fresher stocks are carried, turnovers are greater, and interest charges are reduced. Express shipments have diminished because of the faster freight service and consequently transportation costs are lower, because freight rates generally remain the same. Summing up, I am glad to testify to the splendid development, improvement, and present high standard of the railway service of the nation, and to pay tribute to the directing and operating forces of the railroads. They have done a fine job, indeed.

G. M. Williams, President, Marmon Motor Car Company.—Since 1922 the freight scheduled running time between our plant and points on the Pacific coast has been reduced by exactly three days. Approximately three months ago the eastern trunk lines reduced their time from the Atlantic seaboard 24 hours and in spite of rather severe weather conditions throughout the Alleghenies and in northern New York, have decided to maintain their summer schedule throughout the winter. This improvement alone enables the Marmon Motor Car Company to keep its inventories more constantly in motion and consequently at a minimum.

A very substantial item in a year's operation is the matter of interest on payments for shipments in transit. With the reduction of average running time from various points in the country of from 24 to 72 hours, we receive our money for merchandise sold a commensurate number of hours earlier. On a volume of many millions a year this is rather a substantial item.

Last but not least, are the outstanding improvements made during the past few years in passenger train operation and employees' service to passengers. All of this seems to indicate to me at least a co-operation between employer and employee which has combined toward almost perfection in railroad service.

J. H. Myler, Director of Traffic, Dodge Brothers Corporation.—The fact is conceded that improved service via railroads has been of material benefit to industry, and has undoubtedly resulted in reducing inventories in "banks" of materials carried. To just what extent this improved service has benefited our corporation in dollars and cents, it would be impossible to say at the moment. We do know, however, that we have been able to reduce our inventories to a greater degree than in pre-war days.

Fortunately, our materials originate close to our main plant, and as we do not have outlying assembly plants, it is not difficult for us to obtain prompt delivery of required materials. Of course, this condition does not exist with some of our competitors who have outlying assembly plants, making it difficult for them to secure delivery of assemblies or parts. We have the improved railway service to thank in part for our present national prosperity.

E. N. Hodges, Manager, Traffic Department, Hupp Motor Car Corporation.—A manufacturing plant like ours is not comparable with a wholesale jobbing house or an automobile assembly plant for the reason that we do such a large percentage of fabrication between receipt of the material and the out-turn of the product. This means an inventory period fixed at a minimum which shall insure production without costly interruptions.

In the old days such interruptions were frequent. We used to spend much effort and money in tracing material from the sources of supply. At present with the date of shipment given, we know, almost to an hour, when the material will be delivered.

Formerly to move our outbound product we spent much effort and money. We invested large sums in tarpaulins to cover the automobiles when, of necessity, they were loaded on open-top cars. We spent large sums in repairing floors, doors and roofs of freight cars to make them safe to load. Now a proper car in proper condition is always at hand when needed. I cannot quote the benefits in dollars and cents, but it will take little imagination to realize that they are large and that they are real.

A. J. Brosseau, President, Mack Trucks, Inc.—We have found at our manufacturing plants that railroad efficiency and the reliability of schedules during recent years have facilitated operations very greatly as compared with the period of railroad congestion and service of uncertain character. It is possible to keep our inventories within reasonable bounds, feeling safely dependent on transit for replacements.

It has been our observation that use of the motor truck for small lots and the shorter hauls has fitted admirably into the transportation machine, and no doubt the keeping of such shipments out of the railroad terminals on the part of thousands of shippers has facilitated matters on the main lines for the heavy tonnage and long hauls, to a very great degree.

The improved transportation facilities of the country have played a large part in making possible our increased business activities.

R. E. Scott, President, Reo Motor Car Company.—Our traffic manager reports that the service has been speeded up to a remarkable extent with the result that our inbound shipments are making much better time, and the outbound shipments are reaching their destination almost as quickly as the documents that cover. The whole service has shown a marked improvement in the last five or six years.

L. A. Miller, President, Willys-Overland Company.—There is no question but that improved rail service has been of material benefit to manufacturers. I am unable to tell just what it has meant to the Willys-Overland Company in dollars and cents, but any diminution of railroad service in this country would not meet with an enthusiastic response from us.

Retailers Inventories and Distribution Costs

Retail store operators were almost unanimous in calling attention to the benefits of improved railway service which have enabled them to reduce their inventories. As prerequisites to reduced inventories the retailers emphasized the greater speed with which they are now able to replenish the stocks of goods in their various stores scattered throughout the country, also resulting in more complete satisfaction of customer demand with fresher goods. These concerns also mentioned reduced distribution costs, through the use of freight service instead of express.

Included in the replies from retailers were the following:

M. H. Karker, President, Jewel Tea Company.—Improved transportation service in the past six years has worked hand in hand with greater efficiency in our own organization in bringing about lower distribution and operating costs. Reserve stocks carried in branches have been reduced 50 per cent in distant branches and as much as 75 per cent in branches near the home office. Stocks were turned over three times more in 1928 than in 1922.

Claims against carriers have decreased from 200 in the last half of 1922 and the first half of 1923 to 18 during the first 10 months of 1929. These claims were for the difference between freight charges and the express charges actually paid on express shipments, made

necessary because of delay in transportation of freight shipments.

Improved passenger service has enabled our executives and travelling representatives to cover more territory in greater comfort and in considerably less time. It has been possible to supply customers with much fresher goods, save money on the cost of storage, handling and interest on excess stocks and obtain a closer contact with our branches, through taking advantage of the improved transportation service offered.

H. T. Parson, President, F. W. Woolworth Company.—We used to turn our stock about six times a year. Now we turn it about nine times a year on account of quicker deliveries, which makes it unnecessary for us to carry such large stocks of merchandise, waiting for the new merchandise to come in.

Manufacturers also appreciate this service, as the orders go to them continually now instead of in large quantities for certain delivery dates. They now can operate their factories more steadily, with a continual flow of orders in and shipments out. I believe that this condition has been brought about by improvement in the transportation service.

George G. Federman, President, Interstate Department Stores.—There has been a very substantial improvement in the transportation service throughout the United States, especially in the sections of the country which cover the states from Connecticut to Iowa, in which states the Interstate stores are located. We find that our inventories in proportion are practically 20 per cent less in the various stores, due to the time cut off by the efficiency of the railroads in delivering freight to the cities in which our stores are located. There is no question but what this efficiency has increased the volume of sales in each of our stores, due to the quick delivery of this merchandise. The problem and worry of getting merchandise to our 31 stores in quick time has been greatly eliminated.

Jesse Isidor Straus, President, R. H. Macy & Co., New York.—The outstanding features in improved railway transportation service since 1922 are the speeding up of freight trains about 20 per cent, and the inauguration of regular scheduled service for freight trains by 95 per cent of the carriers. We are thus enabled to obtain our merchandise quicker, and, in addition, guesswork as to when freight will arrive at its destination has been reduced to a minimum. These factors, in turn, have had a marked bearing on our stock turnover and inventory.

J. Spencer Reed, President, Grand Union Company.—During the last few years there has been a marked diversion of traffic from the railways to automobile trucks, and in the chain store grocery business this has been taken advantage of in a larger way than in many other industries; but even with this diversion to motor trucks, our own particular business, in proportion to its volume, probably still uses more railway transportation than our competitors. We feel that improved railway service has had a material effect in reducing inventories. In addition, perishable merchandise consisting of produce and fruit has had a decidedly improved service from the point of origin; also schedules have been maintained and improved materially between our shipping point and our branch stores. This has had a further effect in that it probably has reduced the consumption of canned fruits and vegetables to a certain extent.

George B. Everitt, President, Montgomery Ward & Co.—The speeding up of transit time on the railroads insofar as freight is concerned has been a wonderful thing for Montgomery Ward & Co., as well as for every other shipper. I attribute a part of our increase in business to the fact that we can effect quicker delivery to the customer because of this improved service on the part of the railroads.

R. E. Wood, President, Sears, Roebuck & Co.—Our general traffic manager points out the great improvement which has been accomplished in railway transportation service within the past seven years. This service has improved both on carloads and less-than-carload lots in all our mail order territories. The establishment of increased package car service locally between various gateways has also been of immense benefit to industry. Sears, Roebuck & Co., with its 10 regional mail order stores, warehouses and retail stores in every section of the country, has derived great advantage from improved transportation in supplying the needs of its twelve million customers. The increased facilities furnished by the railroads have also assisted us to reduce the amount of merchandise necessary to carry in stock. Our company has gained material advantage from the increased efficiency in railroad operations.

S. S. Kresge Company.—To quote in dollars and cents, just what the improvement in railway service over the past few years has meant to the S. S. Kresge Company is impossible. We will say, however, that the improved service rendered on the part of the various carriers since 1920 has meant considerable to us—not only in improved service but through the fact that merchandise has arrived in our stores in much better condition, making it possible to dispose of it through regular channels, rather than having to hold carriers responsible for damages by means of claims.

This improved service also has benefited us greatly in that we can much better figure turnovers of our stock. Where formerly it would take from three to four weeks to get shipments into our stores, we can now get three to ten-day service. Our business is strictly selling and it is very important that we get fast movement of our shipments.

Joseph Samuels, President, Outlet Company, Providence, R. I.—It appears to us that the railroads have shortened the time of delivery of freight moving from the center of the country to the coast and vice-versa. Through trains and through cars have accomplished this shortening of time. On less-than-carload lots, by the elimination of numerous transfers of freight resorted to in the past, the time consumed in transit has been substantially reduced. More recently the railroads have set about to shorten the time consumed in shorter hauls. There is no gainsaying the fact that these improvements have been a distinct benefit to our own company and have helped us in our efforts to operate our business on inventories as small as are consistent with the maintenance and improvement of our service.

E. R. Clarkson, of Kaufmann's Pittsburgh, Pa.—The speeding up of railway freight service has been of inestimable benefit to the retailers, inasmuch as it has speeded up the turnover of stocks considerably, and enabled the retailer to keep stocks in a more liquid condition. It has minimized the speculation in merchandise stock, and helped its promotion, because the merchant can plan his business in a much shorter space of time, due to the fact that he knows specifically when the merchandise will be received. Only those in the retail business can appreciate the many problems which have been solved by the improvement in railway service during the past seven or eight years.

L. M. Monheimer, Vice-President, May Department Stores Company, St. Louis.—Railroad transportation insofar as it affects the handling of freight traffic could

not very easily be improved. Our experience in the last year has been that we are almost as well off shipping our merchandise by freight as if we shipped by express, that is, as far as time is concerned. Naturally, the cost of freight transportation is considerably less than that of express. In addition to that, the co-operation of the traffic agents of the various roads has been of the most constructive character.

Edward J. Frost, Vice-President, Wm. Filene's Sons Company, Boston.—The improvement in transportation of all kinds, including rail and express, has been particularly valuable to our company in that it has enabled us to reduce deliveries, shorten the time between date of orders and the receipt of merchandise, and in general to keep in very much closer and economical contact with our sources of supply.

D. F. Kelly, President, The Fair, Chicago.—We are thoroughly well satisfied with the deliveries that are now being made by the railroads. In fact, it is seldom that we have a complaint. We cannot conscientiously say that we have made any particular saving in the matter of inventory, by the improvement in railway service, for the reason that in our business we buy only for our immediate needs, due to ever changing style of merchandise of almost all kinds. It is of great satisfaction to know, however, when we order merchandise shipped from the east to Chicago that we get it on the morning following delivery to the carrier. We have saved and are saving considerable in the way of express and parcel post charges for this reason. This we were unable to do during the war and prior thereto.

Robert H. Crawford, Vice-President, American Stores Company, Philadelphia.—The railroad service of today is on a good, efficient basis, in the respect that cars are coming through from the source generally on better time and the employees are serving their customers more efficiently and more congenially, thereby establishing much better morale at the point of delivery. A very marked improvement has taken place during the past ten years.

Paper Manufacturers and Users Also Benefit

Improved freight service has been helpful to paper mills and to the printing industry by reason of its effect on the size of inventories. Several replies were received from this type of concern as follows:

H. W. Ellerson, President, Albemarle Paper Manufacturing Company, Richmond, Va.—One never hears today a complaint from the shipping department of the inability of carriers to furnish freight cars in good order for their service. The improvement in less-than-carload service has been very helpful to manufacturer and distributor because it fits in with the new order of purchasing, which has changed from that of carload buying to less-than-carload buying. Whereas this policy has placed a heavier handling expense on the manufacturers, it has in many ways been very helpful to the distributor and therefore is desirable to industry. I think that the improved transportation service which this country has enjoyed has been the greatest factor in the unprecedented prosperity of the past few years.

Phillip S. Collins, Treasurer and Business Manager, Curtis Publishing Company, Philadelphia.—The fact that in the manufacture of our magazines we use several kinds of paper, and that issues of varying paging require varying proportions of paper of various widths to suit the different types of presses used, necessitates our having available at all times a supply of each unit sufficiently large to meet constantly changing conditions. At one time, in order to provide for all contingencies, we felt it necessary to keep on hand here in Philadelphia a supply of paper which taxed the capacity of our paper storage warehouse. Due to steady improvement in shipping conditions and dependability of service, we have found it possible to so lessen this precaution as to justify us in converting about a third of our paper warehouse into manufacturing space, storing a reserve at our paper mills in Western Pennsylvania and in Massachusetts. This in spite of the fact that our requirements have materially increased.

F. J. Sensenbrenner, President, Kimberly-Clark Corporation, Neenah, Wis.—During the last seven years railway transportation service has been exceptionally efficient. The heavier loading and more rapid movement of cars has afforded us an abundant car supply. This is especially important in our line of business because of our large consumption of pulpwood. This commodity is a seasonal product, and our entire annual requirements have to be moved during a period of four to five winter months. It has enabled us to keep our inventories down to the minimum, and what is more important, it has enabled us to give our customers exceptional service without burdening them with carrying large stocks.

John M. Tuttle, President, International Printing Ink Corporation, New York.—Our industry in general, and our companies in particular, have been undergoing a period of expansion which has naturally tended towards increased inventories. Offsetting this our laboratories and production organization have carried out an extensive program of standardization and simplification. I do not hesitate, however, to say that if rail transportation conditions today were the same as those obtaining in 1922 our inventories, both raw materials and finished products, at our factories and branches would be considerably greater than we now carry.

Food Jobbers Profit by Inventory Reductions

F. F. Klinmann, Purchasing Agent, Ward Baking Company.—In making a check of present conditions as compared with past conditions, we find that due to quicker service we were in a position to reduce our inventories 25 per cent over previous years, which is a considerable saving.

Traffic Manager, Kroger Grocery & Baking Company, Cincinnati.—The evenness of service and the maintenance of schedules by the carriers has been a concrete help not only in maintaining but in reducing turnover in our company by the even flow of traffic. It has further largely assisted in reducing distribution costs.

C. C. Crellin, Director of Traffic, General Mills, Inc., Minneapolis.—Some time ago we discontinued the general practice of carrying stocks of flour at centrally located points so that we are not in position to state the effect the improved transportation service might have in the reducing of stocks. We can, however, state that improvement has been marked in years.

There has been one adverse effect due to the fact that the transportation situation generally is well known to our customers, and with the idea no doubt of carrying smaller stocks and of reducing the necessity of financing the stocks, they delay placing shipping instructions in many cases to a point where it is almost impossible, even with the prompt service afforded by the carriers, to make deliveries in time to satisfy their requirements. One outstanding feature of improved service is the fact that it is no longer necessary, except in unusual cases, to trace the movement of carload shipments.

(Additional letters, from manufacturers of miscellaneous commercial products, and heavy machinery, and operators of steel mills, will be quoted in Part II, which will appear in *Railway Age* of January 18.—EDITOR.)

Communications and Books

Credit Where Credit Is Due

NEW YORK CITY.

TO THE EDITOR:

Thank you for the editorial in your issue of December 28 on the subject of credit to engineers for the work they do.

I wonder how many of the people who travel, for instance, from the Pennsylvania terminal in New York through the tunnels under the river and the Bergen Hill—a trip which takes less than five minutes and during which most of the travellers are getting comfortably settled in their seats—how many of them think of the six or seven years of unremitting vigilance and work and thought on the part of the engineers and contractors that went into the building of this piece of line.

How many travellers—or railway officers for that matter—travelling over the western prairies or the Alleghenies or Rocky mountains in Pullman cars or comfortable diners think of the original locating engineer after a hard day in the field sitting in his tent at night trying to fit his tangents and curves to the elusive contours and save a few thousand yards of cut or fill or shorten or eliminate a bridge or tunnel, work that is almost inevitably forgotten as soon as the trains are running.

We engineers do these things as a rule without much thought of ultimate reward—though I think we finally get our share of it—but it is comforting to have our labor recognized and I think many more than myself will thank you for publishing this little editorial even if they do not write about it.

A FORMER LOCATOR.

Who Should Pay for High-Speed Highways?

LAKE ODESSA, MICH.

TO THE EDITOR:

A popular magazine of science has considerable to say about the automobile roads of the future, the regulation of traffic by enforced high speed and the forbidding of same-direction passing. However, not all persons are fit to drive 70 or 80 miles an hour, and they do not re-act to what they see soon enough to stop in time to permit such speeds to be safe.

The state (a political institution supported by taxes) has seen fit to build roads and in building them has ignored the investment of the people in railroads, both in stocks and bonds. It has helped to set up truck and bus competition against the investment in railroads and it has encouraged a carrying unit which transports relatively few passengers. It takes 40 to 80 horse power to haul one or two persons over the highway in a large per cent of cases.

Justice would seem to require that high speed roadways if built should be built at the expense of the operators of high speed vehicles without tax help, nor a gasoline tax on low speed drivers.

If there is to be a competition from long distance high speed buses and trucks and such vehicles can make 70 or 80 miles an hour, let their operators patronize this high speed road and collect appropriate charges from the passengers and freight receivers.

To advocate high speed highways without considering their implications is like favoring 100-story buildings, without considering anything about the congestion at the base of such structures.

"Science" is possibly an overworked, overvalued word, which has clambered to the back of politics to make an ill-advised get away; but time will show that money does not grow on trees where it can be picked to foot the bills of this kind of "science."

ELSON AVERELL.

New Books

Rate-making for Common Carriers, by J. Haden Alldredge, chief of the Transportation Bureau of the Alabama Public Service Commission. 201 pages 6 in. x 9 in. Bound in cloth. Published by the Harrison Company, Atlanta, Ga. Price $5.

The treatise states and explains the principles governing the regulation of rates, rules and practices of public service agencies in such a way as to be helpful to one whose duty it is as counsel or commissioner to determine what is a proper rate under a given situation. The book is not a legal treatise, being something more than a discussion of ecenomic principles applicable to the subject of governmental regulation. One chapter defines, describes and explains the function of rates, another shows the influence of government regulation on rate-making, while a third discusses the general principles of rate-making. Other subjects in the book are railroad freight rates, railroad freight classifications and exceptions thereto, railroad passenger fares, parlor car and sleeping car fares, express rates, telegraph rates, telephone rates and motor vehicle rates.

The Freight Traffic Redbook, by Charles J. Fagg and Harry G. Williams. 920 pages. 8 in. x 11 in. Bound in cloth. Published by the Traffic Publishing Company, Inc., 150 Lafayette Street, New York. Price $10.

The authors have endeavored to give in an unbiased and brief, yet comprehensive form, the fundamental principles underlying the transportation business, as thus far developed, together with the present laws, rules and practices governing the operation of railroads in such a manner as to provide a ready-reference book for the busy traffic man and a text-book for the student of traffic management. Thirteen pages of the book contain a glossary of terms used in traffic work, following which are 120 pages devoted to rate-making, including the cost theory, freight classifications, rate territories and rate bases or outlines of the specific factors or elements which control the making of particular rates or rate structures. The remainder of the book is devoted to an abstract of Rate Structure Investigations No. 17000, instructions for shipping orders and bills of lading, for packing and marking, for division and reconsignment, for demurrage, for storage, for lighterage, for switching, for weights and weighing, for routing, for transit privileges, and for the payment of transportation; explanations of freight claims, land grant rates and mileages and freight tariffs; a summary of I. C. C. tariff rules and conference rulings; a copy of the Interstate Commerce Act, the Railway Labor Act, the Inland Waterways Corporation Act, the rules of practice before the commission in proceedings under the Interstate Commerce Act, I. C. C. fourth section orders, Canadian-United States International rates, car service rules and per diem rules; outlines of private car service, car mileage allowance, freight consolidation service, and air transportation; and information on many other subjects pertaining to traffic.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Commercial Structure of New England, by Edward F. Gerish. A study of the major distributing areas, the food market in New England, buying habits, income, etc., with a special chapter on transportation discussing waterway, railway, and highway transportation facilities and traffic, Domestic

Commerce series bulletin no. 26 of the U. S. Bureau of Foreign and Domestic Commerce. 323 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. 95 cents.

Descriptive List for Use in Acquiring and Discarding United States Government Periodical Mimeographed Statements, compiled by the Special Libraries Association. The current statistical reports of the government, issued weekly or monthly in mimeographed form, give a wealth of up-to-date information on production, freight shipments, price statistics, and market conditions for hundreds of commodities, besides crop reports, financial statistics and important data on the country's industries. 76 p. Pub., 1929, by the Special Libraries Association, 11 Nisbet street, Providence, R. I. $1.75.

The Dissenting Opinions of Mr. Justice Holmes, arranged, with introductory notes, by Alfred Lief. Grouped under three headings "On hampering Social Experiments," "On Infringing Upon Freedom," "On Encroaching Upon the States" (this includes the opinion on burdens on interstate commerce, p. 109 and "Too many grade crossings," p. 150), "On Usurping Power," "On Escaping Taxes" and three majority opinions relating to the espionage act, together with excerpts from other majority opinions. To Justice Holmes is also attributed the famous remark "The East invented religion and the West invented the railroad train. On the whole, I prefer the railroad train." Absolutely no dull reading. 314 p. Pub. by the Vanguard Press, New York City. $4.50.

Index to "Consolidation of Railroads" 159 ICC 522. An alphabetical index of the railroads mentioned in the Commission's plan showing systems to which they are allocated under the plan and the pages. 37 p. Pub. by Library, Bureau of Railway Economics, Washington, D. -. *Apply.*

The Thing Called Value, by John R. Leighty. An interesting brief essay on what is value and when it is value that should help many a puzzled mind in valuation discussions. Eastern Group Pamphlet no. 413. 18 p. Pub. by Presidents Conference Committee, Eastern Group, New York City. *Apply.*

Periodical Articles

L'État des Etudes du Transsaharien, by Rober-Raynaud, Summary of results of surveys. A western route from In-Tassit to Nemours on the Mediterrancan has been recommended. It is 2269 kilometers in length and the estimates for cost of construction are 3 milliard, 187 million francs. Time of construction, 8 years. Revue Politique et Parlementaire, December 10, 1929, p. 438-446.

Florida—The Fountain of Youth, by John Oliver La Gorce. Tribute is paid to the railroaders whose "folly" pushed lines through Florida and there is a striking picture "Where a magic railway runs out to sea" on p. 70. National Geographic Magazine, January 1930, p. 1-93.

Need for Statistics as a Measuer of Industrial Changes, by Ethelbert Stewart. The Commissioner of Labor Statistics points out the omissions in our present statistics that make it next to impossible for us to gauge the changes that are happening. American Federationist, January 1930, p. 88-92.

Right Hand Side, by Edwin C. Hill. Biographical sketch of John Draney, Senior Engineer, Lackawanna Railroad. Railroad Man's Magazine, January, 1930, p. 161-171.

A Solution of the Chinese Eastern Railway Conflict, by C. C. Wang. "The fundamental principle of the 1924 agreements requires that the Chinese Eastern should be managed as a purely commercial enterprise, to be shared in equally by China and Russia. The only way to do that without interfering with the efficiency of the railway seems to be to take the management of the railway out of politics and place it in the hands of a neutral expert." p. 296. Foreign Affairs, January 1930, p. 294-296.

White Coal for Railways in France, by Arthur Train, Jr. Proposed electrifications. Map of electric lines and power plants of France, p. 53. World's Work, January 1930, p. 52-56.

Looking Backward

Fifty Years Ago

The Atlantic & Great Western [now a part of the Erie] was sold in Akron, Ohio, on January 6, under concurrent decrees of the courts of New York, Pennsylvania and Ohio. Only one bid was made and the road was sold at $6,000,000, the minimum appraised valuation, to representatives of the organization trustees.—*Railroad Gazette,* January 9, 1880.

The Cairo & Vincennes [now a part of the Cleveland, Cincinnati, Chicago & St. Louis] was sold in Springfield Ill., on January 5, under a decree of the United States Circuit Court to trustees for the bondholders; the price being $2,000,000. The road extended from Cairo, Ill., to Vincennes, Ind., a distance of 157 miles and had a bonded debt of $5,000,000.—*Railroad Gazette,* January 9, 1880

During 1879, a total of 65 railroads with a mileage of 4,909 and a capital investment of $243,288,000, were sold under foreclosure, thereby exceeding the sales in any previous year. In 1876, there were 30 roads with a mileage of 3,846 sold; in 1877, 54 with a mileage of 3,875; and in 1878, 48 with a mileage of 4,909. In addition, receivers were appointed for 6 roads whose mileage was 457 and whose capital invested was $22,200,000.—*Railway Age,* January 8, 1880.

Twenty-Five Years Ago

Senator Newlands of Nevada introduced a Senate resolution on January 4, providing for the appointment of a commission instructed to frame and report to Congress, a national incorporation act "for the construction and consolidation of railroads employed in interstate commerce." *Railway Age,* January 13, 1905.

The United States Court of Appeals, sitting at Philadelphia, on January 3, reversed the decision of the New Jersey Circuit Court, in the suit of H. E. Harriman and others against the Northern Securities Company, and dissolved the injunction issued by the New Jersey court, on April 20, 1904, restraining the company from distributing certain stock of the Northern Pacific.—*Railway Age,* January 6, 1905.

L. B. Allen, assistant engineer of the Chesapeake & Ohio at Richmond, Va., has been appointed division engineer at Ashland, Ky. W. F. Thiehoff has been appointed trainmaster of the St. Joseph division of the Chicago, Burlington & Quincy at St. Joseph, Mo. L. W. Landman, general agent of the passenger department of the Cleveland, Cincinnati, Chicago & St. Louis at Toledo, Ohio, has also been appointed general agent of the freight department.—*Railway Age,* January 6, 1905.

Ten Years Ago

The Association of Railway Executives and several of its principal committees held a series of meetings at Washington on January 3, 4, 5 and 6, to consider the various problems with their multitude of details, connected with the transfer of railroad operations to the companies on March 1.— *Railway Age,* January 9, 1920.

Net operating income of the railroads in November, 1919, reached the lowest point it has reached in November for 30 years, according to preliminary returns, amounting to only $22,000,000, as compared with $57,000,000 for this month in 1918, $76,000,000 in 1917, and $83,600,000, the average for November during the three-year test period.—*Railway Age,* January 9, 1920.

The conference committee which is engaged in an effort to reconcile the differences between the Esch and Cummins railroad bills passed by the House and Senate, respectively, has held almost daily sessions with the exception of Sundays and holidays, but has thus far devoted its time principally to the ironing out of minor differences in the provisions of the two bills which are generally similar in purpose and on which it is comparatively easy to reach an agreement.—*Railway Age,* January 9, 1920.

Odds and Ends of Railroading

Edison's Co-Worker

B. C. White, retired assistant trainmaster of the New York division of the Pennsylvania, worked at the laboratory at Menlo Park, N. J., 50 years ago, at the time the incandescent bulb was invented by Thomas A. Edison.

A Bridge That Changes Color

Did you know that there is a railway bridge on this continent that is painted in one color half-way across, and in another color on the other half? It is the bridge across the Rio Grande river, connecting El Paso, Texas, and Juarez, Mexico. The half that is owned by the Atchison, Topeka & Santa Fe is painted in Santa Fe red, the other half, owned by the National Railways of Mexico, is painted black.

A Real Railroad Town

Lombard, Mont., a town which nestles in the mountains east of Butte, and is a junction of the Chicago, Milwaukee, St. Paul & Pacific and the Northern Pacific, is probably the only railway junction point in the country that cannot be reached by automobile. The only way into the town is by either of its two railroads, or by skiff on the Missouri river, as there are no roads leading into it.

A Railroad Flask

Edwin Lefevre, writing in a recent issue of the Saturday Evening Post, gives some interesting information as to historical bottles. He is a collector of such bottles, and has hundreds of them around the house. He mentions as one of his most treasured flasks one that was manufactured about 1828, which bears, blown in the glass, the inscription: "Success to the Railroads," and also bears a reproduction of a horse drawing a train of cars over the rails.

Stock Ownership Scattered

The widespread ownership of the railroads is strikingly illustrated in the case of the Illinois Central. A recent compilation showed that there were 20,800 registered holders of Illinois Central stock, 87 per cent of whom owned fewer than 100 shares each. Wyoming is the only state in the Union which is not represented by an Illinois Central stockholder. Illinois heads the list with nearly 6,000. Forty-two per cent of the Illinois Central stockholders in this country are in the 14 states in which the system operates. Only 680 of the 20,800 are found in foreign countries.

Fire Hazards

If you don't believe this one, you may call upon Fire Inspector Holm of the Winnipeg division of the Soo Line for corroboration. It appears that a jack rabbit ran through a blaze where section crews were burning the right of way and set fire to the hair on his tail. The animal then ran under a small building used as a waiting room for passengers at a siding. Under this building, it was learned afterwards, a pole cat had established its nest, which was very inflammable, and the rabbit dived into it, causing a fire which quickly consumed the building. Evidently Mrs. Pole Cat was not at home at the time, otherwise the fire would have been checked in the starting.

"One More River to Cross"

The old saw, asking: "Why does a chicken cross the road?" is paralleled sometimes by the question: "Why does a railroad cross the river?" The answer to both questions is the same: "To get to the other side." Frequently, the exigencies of railway location in rough country require the railway to get to the other side with a great deal of frequency, but nowhere, probably, is the record of the Southern Pacific equalled. Coming down the rugged and beautiful Sacramento canyon, in Northern California, the S. P. tracks cross the Sacramento river 18 times in 32 miles. Lovers of scenery riding along this line certainly get an eyeful, but they are kept busy hopping from one side of the car to the other.

Big Money

What was probably the largest bill ever presented for railroad fare was given to Conductor P. F. Fitzgerald of the New York Central, by the wife of a prominent theatrical producer, at Cleveland, as she boarded the Ohio State Limited. The woman had a ticket for a lower berth on the train, but desired to secure a drawing room. Conductor Fitzgerald procured it for her, and she tendered him a $1,000 bill in payment. Of course, the conductor was amazed at the size of the bill and asked her if she had anything smaller. On searching her purse she found another $1,000 bill and two one-dollar bills. Conductor Fitzgerald arranged for the woman's drawing room, and then wired ahead to New York to have the change ready. When the Ohio State Limited arrived in New York, a messenger was awaiting the train with nine $100 bills and the change for one hundred.

Definition

Commuter—One who spends his life
In riding to and from his wife;
A man who shaves and takes a train
And then rides back and shaves again.
—E. B. White in "The Lady Is Cold."

Commuter—One whose life's in hock
To railroad, cereal and clock;
A man whose one ideal of bliss is
To catch the train he always misses.
—H. I. Phillips in the New York Sun.

Commuter—One who gets his paper read
Long before he goes to bed;
A man who does not have to beat
A stenog up to get a seat.
—M. B. R.

Lay Appreciation of Railway Bridges

Builders of railway bridges, as a rule, take a great deal of justifiable pride in their work, not only because of its utility, but because of the beauty with which every properly designed and correctly proportioned bridge displays. The recent death of William J. Krome, the builder of the series of bridges on the Florida East Coast, which connect Key West with the mainland, is a case in point. Mr. Krome died of shock upon being told of the damage inflicted upon his masterpiece by a tropical hurricane.

However, it may be that the railway bridge builders do not realize the appreciation by the laymen of their structures. Two recent cases will serve to illustrate that, in many instances, persons who know nothing of railroading and still less of bridges, are, none the less, considerably impressed by a railway bridge that is beautiful. The vice-president of a banking firm, returning from a summer in Europe, reported that one of his outstanding impressions was the view of a railway bridge he got in this country, on his way back from Europe. The managing editor of a large metropolitan newspaper, returning from an automobile tour of the West, gave equal stress with the mountains to three railway bridges he had seen in the course of his travels.

The reactions of these men are, naturally, shared by thousands of others of less prominence, so that it would seem that appreciation of the bridge builder and designer's work is by no means confined to those who know how to build bridges.

NEWS *of the* WEEK

The Boston & Maine's "Minute Man" with Locomotive "William Dawes," at Waltham, Mass.

THE ANNUAL MEETING of the American Association of Railway Advertising Agents will convene at the Union League Club, Chicago, on January 18.

THE CAR FOREMEN'S ASSOCIATION OF CHICAGO will hold its next meeting on Monday evening, January 13, at the Great Northern Hotel. The discussion will be on the new rules of interchange.

H. W. LEWIS, CHAIRMAN, announces that the thirty-sixth annual meeting of the Signal Section of the American Railway Association will be held at Stevens Hotel, Chicago, on Monday and Tuesday, March 10 and 11.

THE RAILWAY CLUB OF GREENVILLE (Pa.) will hold its next meeting on Tuesday evening, January 21, at Zion's Reformed Church, Greenville. The meeting will be in charge of J. C. Whiteman, chairman of the Central Safety Committee.

THE CRESSON DIVISION of the Pennsylvania, consisting of branch lines in the region northwest of Altoona, has been detached from the Eastern region and is now a part of the Central region. The number of employees on this division is about 750.

THE PROBLEM OF TRANSPORTATION in New England, which is to be studied by the New England Governors Railroad Committee, is intended to include ocean and inland water routes, as well as railroad traffic; and the studies will extend outside of New England. The committee, of which R. H. Spaulding, of New Hampshire, is chairman, held its second meeting in Boston on January 3. The vice-chairman is James L. Richards, of Boston.

CHRISTMAS DAY was marked at the Grand Central Terminal, New York City, not only by a grand display of evergreens but by modern musical entertainment. By the use of amplifiers, suspended from the lofty ceiling of the concourse, the throngs of passengers were entertained by both vocal and instrumental music, given by Miss Mary Lee Read and a quartette. The decorations for the west gallery of the concourse consisted of two living Christmas trees, about 25 ft high, with the usual myriads of lights; and the wreath on the south side of the room was 20 ft. in diameter.

The Interstate Commerce Commission has issued a finding on a complaint filed by the City of St. Paul, Minn., that the establishment of a freight car interchange track between the rails of the municipal barge terminal at St. Paul, and the line of the Chicago, Milwaukee, St. Paul & Pacific is reasonably required in the interest of public convenience and necessity. No order was issued, but the Milwaukee road will be expected, as a result of conference and agreement with complainant, to install a suitable connection and complainant will be expected to bear the cost.

Fire Protection News Letter

News letter No. 37 of the Railway Fire Protection Association has been issued by R. R. Hackett, secretary (Baltimore, Md.). Leading articles in this pamphlet are one on spontaneous heating of agricultural and industrial products, by C. P. Beistle; on fire prevention for railroad properties, by de Witt Rapalje, and safety rules for electricity, by A. E. Farmer.

Private Car Order Postponed

The Interstate Commerce Commission has postponed from January 15 to February 15 the effective date of its order in the private car case, requiring the railroads to cease carrying private or office cars for each other free or at less than published tariff rates. The delay is to allow time for proceedings in the federal court at Louisville, Ky., where the Baltimore & Ohio, the Chesapeake & Ohio, the Cleveland, Cincinnati, Chicago & St. Louis, the Illinois Central, the Louisville & Nashville and other roads have applied for an injunction.

Bus Legislation Considered

Chairman Parker, of the House committee on interstate and foreign commerce, has reintroduced his bill to regulate interstate commerce by motor vehicles operating as common carriers of persons on public highways, as H. R. 7954, including some changes from the form in which the bill stood at the last session of Congress. Hearings on the bill were begun before the committee on January 8, at which those opposed to it were allowed to express themselves, and it was expected to hear from representatives of those in favor of the bill on the following day. The committee also has before it a bill introduced by Representative Hoch, which represents the views of some of the committee, providing only a requirement of a surety bond for the protection of passengers and employees.

Safety Record at Tampa

The shops of the Atlantic Coast Line at Tampa, Fla., where about 500 men are employed, have not had occasion to report an injury to an employee since October, 1927; and during that time, the force has worked 2,715,769 man-hours. James Grant has been shop superintendent since January, 1927, but has recently been promoted to superintendent of motive power. His successor, W. C. Stephenson, is carrying on the same splendid work.

A Ten-Thousand-Dollar Prize

An annual prize of $10,000, accompanied by a gold medal, is announced by Popular Science Monthly (New York City) to be awarded to the American citizen who has been responsible for the achievement in science of greatest potential value to the world. The prize will be conferred for the first time in September, 1930, and the initial period of scientific accomplishment will be the twelve months ending June 30, 1930. Twenty-four leaders in American science are to serve as a committee of award, under the direction of Professor C. P. Bliss, associate dean, New York University.

Medal to I. C. Engineman for Bravery

President Hoover, acting under the law of 1905, has awarded a medal of honor to C. M. Collins, Illinois Central engineman of Gilman, Ill., for saving the life of an elderly woman, Mrs. J. M. Dale, at Clinton, Ill., on April 14, 1929. Mr. Collins leaped in front of an approaching passenger train, seized

the woman and carried her quickly to safety.

While other spectators shouted to her, Mr. Collins, who had been oiling his engine on a track nearby, rushed across the platform, leaped into the path of the approaching train, seized Mrs. Dale and carried her forward to the narrow clearance space between the two tracks just in time to escape being struck by the engine. The beam of the locomotive struck Mr. Collins as it passed, but he escaped injury.

Erie Compromises with Trainmen

G. W. W. Hanger, member of the United States Board of Mediation, announces that after negotiations continuing through several weeks, the grievances of trainmen of the Erie which were said to threaten a strike, have been composed. The company has agreed to comply with the request for a seat for the brakeman in freight locomotives, and has agreed to submit to three arbitrators the demand for an increase in the pay of trainmen on the Wyoming branch. Grievances other than these two, which involve alleged infringement of contract regulations and which number about 100, are to be dealt with by the Eastern Train Service Board of Adjustment. Two controversies which had been added to the program since the mediator came into the case, have been laid aside.

Kansas Governor Asks Investigation of Contributions

Governor Clyde M. Reed, of Kansas, has written a letter to the Interstate Commerce Commission calling attention to a report submitted to the Senate on December 20 by a subcommittee of the Senate judiciary committee which is investigating "lobbying," wherein are listed a number of railroads among the contributors to the American Taxpayers' League, which the subcommittee referred to as being merely one of the "aliases under which one J. A. Arnold operates, ostensibly to influence Congressional legislation." Governor Reed suggested the propriety of the commission's investigating the accounts of the carriers and any others that might be similarly involved, "to determine if the expenditure of money chargeable to operating expenses for such purposes is a common practice, and if so, the extent to which such practice has gone." The list included not only half a dozen railroads but many other large corporations, in amounts ranging from $10 to $1,500. The largest contribution in the list, however, was $2,050 from the governor of Florida.

One-Month Summer Courses at Harvard

The courses in railway transportation given by William J. Cunningham, James J. Hill, Professor of Transportation, Harvard University, and Winthrop M. Daniels, Thomas DeWitt Cuyler, Professor of Transportation, Yale University, are again included in the schedule of studies at the special summer session for business executives to be held during July at the Harvard Graduate School of Business Administration. This 1930 session is the third which has been held at Harvard.

The announcement states that there will be little change in the scope of the various courses, but the term will be shortened from six weeks to one month. This shorter term was inaugurated in response to requests from various business men who felt that the lesser period would be more convenient for them. In addition to the transportation courses, six others will be offered as follows: Finance, Interpretation of Financial Statements, Manufacturing Policies, Public Utility Management, Retail Distribution and Sales Management.

At the 1929 session 224 men, representing 145 different companies and recruited from 28 states and 4 foreign countries, were in attendance. A photograph and list of the men in the 1929 transportation group was published in the *Railway Age* of August 31, 1929, page 569.

Economic Survey of Inland Waterways Proposed

A. Lane Cricher, chief of the transportation Division of the Department of Commerce, has announced a plan for the appointment by the department in the near future of an advisory committee, representing all sections of the country, to co-operate with it in a survey of the economic phases of the inland waterways work of the department. The Department of Commerce and the War Department have worked out a plan for co-operation in the determination of economic and engineering facts necessary in carrying out the President's policy for the modernizing of "every part of our waterway system that will show economic justification," and the Transportation Division is now engaged in certain studies of the economics of river improvements, on which it proposes to publish a bulletin. It is also collecting for the War Department some information as to the prospective commerce on the Missouri river; while the War Department is engaged in engineering phases of the investigation.

Two Vacancies on I. C. C.

Having accepted the resignation of Commissioner J. B. Campbell and withdrawn the nomination of Robert M. Jones of Knoxville, Tenn., President Hoover now has two vacancies to fill on the Interstate Commerce Commission. He has stated that he proposes to find a successor for Mr. Campbell from the intermountain section and a man to succeed Commissioner Taylor, whose term expired on December 31, from the southern states. Commissioner Campbell has resigned to engage in the practice of law in Washington, which is said to have proved lucrative to several of his predecessors. Chancellor Jones informed the President that he did not wish to accept the appointment after the Senate had postponed action on his confirmation for an investigation by the committee on interstate commerce.

Appointment of W. E. Lee, justice of the supreme court of Idaho, has been strongly urged by members of Congress from that section, while the southern Senators have proposed many names. It is understood that the President has asked the American Engineering Council to submit some names and that he did the same thing when seeking a successor for Commissioner Taylor; but that at that time he suggested among the specifications that the man be a Republican from Tennessee.

Illinois Central Extends Industrial Development

The Illinois Central, as a further expansion of its efforts for the industrial upbuilding of its territory, has engaged the Pace Company, Chicago, to make a series of surveys covering raw materials, taxation, markets, power rates, labor conditions and other industrial factors. The Pace Company is to co-operate with civic organizations in various communities in its local surveys and campaigns. Other projects upon which the Pace Company is engaged are the co-ordination of various local and regional programs for industrial development, the solicitation of industries that are contemplating removal or the establishment of branch plants, and the giving of assistance in working out the problems of dormant industries now located in Illinois Central territory. The work of the Pace Company supplements that of Mark Fenton, recently appointed general industrial agent of the Illinois Central.

Increase in P. R. R. Stockholders

Pennsylvania Railroad stockholders are continuing to grow in number. A new high record of 191,079 registered owners of shares was reached on December 1.

This is the third consecutive month in which the stock has risen to record-breaking levels for widespread public distribution, figures for September and October having topped all preceding marks.

A total of 3,032 new shareholders was added to the company's books during November. The number of holders registered on December 1 showed an increase of 36,012 as compared with the same date a year ago.

A large proportion of this heavy increase in Pennsylvania stockholders is accounted for by the addition during the last three months of many new employee holders as a result of the employees' stock allotment authorized by the board of directors in July 1928. The average number of shares held by stockholders on December 1st was 59.9. A total of 11,444,324 shares, at par value of $50 each, was outstanding.

The Station Agent and Claim Prevention

The critic of freight office work who really gets into the inside of the clerical machinery, is the head of the freight claim department. One of these officers, in a recent circular, gave the agents, among other things, the following comprehensive hint: "In many of the investigations of errors at stations, we find that they are committed by new employees

who have not been in the railroad service a sufficient length of time to understand the duties and the work required of their positions. An agent or a chief clerk who puts so much work on his own desk that he has not the time to properly supervise the work of his subordinates, particularly the new employees, to see that it is properly done, is lacking sadly in executive ability." Helpers at stations are sometimes allowed to make out important reports and send them to headquarters on their own responsibility. There can be no objection to the helper doing such work, but who is the agent or chief clerk who thinks it right to let such work pass without inspection?

The freight claim superintendent who used to tell agents that his business was to find fault, voiced a perennial but often unpleasant truth. The circular here quoted from, speaking of cars stopped off to be partly unloaded, says that there is a good deal of trouble with claims on shipments of this kind. The first unloading must be followed by carefully re-stowing the merchandise that is left in the car. Another case for criticism was where a motor truck line brought in a shipment, from a town a dozen miles away, and secured from the railroad agent a receipt for the goods, made out on the truck line's bill of lading, the date line showing the originating point, which was not on the railroad.

Inspection reports containing different statements which are contradictory, one to the other, constitute one of the annoyances of the freight claim office. The word "if" has no place in such reports.

This circular deals primarily with station agents, but also contains a significant hint to the trainmaster in the statement that freight claim payments for the first nine months of 1929 have increased over the payments for the corresponding period of 1928, mainly because of rough handling and unlocated damage; and wrecks "over which we have little or no control" are said to hit the claim-prevention campaign a severe blow.

Revival of Southern New England Line Advocated

Sentiment has recently developed in Rhode Island and Massachusetts favoring the completion of the construction of the long-abandoned Southern New England railway line between Palmer, Mass. and Providence, R. I. Work on this 75-mile extension of the Central Vermont was discontinued by the Grand Trunk in 1913 after more than $2,000,000 had been expended. While the charter has been continued in existence by successive extensions in both the Massachusetts and Rhode Island legislatures no actual construction work has been done since the abandonment.

The present agitation for the revival of the project comes from the Providence Chamber of Commerce and representatives of several towns through which the proposed line would pass. The Southern New England is now in the hands of receivers with the Canadian National the principal creditor. Recently there has been formed the North Atlantic Terminal Railway Company to take up the Southern New England charter and negotiate with Southern New England creditors for the acquisition of the option to construct the line.

The following statement was made by Sir Henry W. Thornton, chairman and president of the Canadian National Railways, at the system headquarters in Montreal last week:—

"Various rumors have been current in the press and elsewhere with respect to the attitude of the Canadian National Railways system towards the Southern New England Railway, a partly constructed line between Palmer, Mass., and Providence, R. I., sponsored by the old Grand Trunk system some twenty years ago.

"The project to construct the Southern New England from Palmer to Providence was definitely abandoned by the Grand Trunk system, and its successor company, the Canadian National system, has not changed that policy. The Southern New England is now in receivership and is being liquidated for all the creditors of which the Central Vermont Railway is one. The right-of-way and other property is for sale and all matters relating thereto are under the jurisdiction of the court. Insofar as the Central Vermont's claims against the property is concerned, its desire is only to salvage as much as possible. Any purchaser of the right-of-way and other property would presumably be welcomed by the receivers acting for the court. The Central Vermont will naturally assist in any advantageous sale.

"The administration of the Canadian National Railways has received no proposals whatsoever for the purchase of the Central Vermont, and at the present time has no intention of parting with that property."

Glorification of the Erie Limited

The plaque illustrated herewith is one which has been presented to the Erie Railroad by the Chamber of Commerce of Binghamton, N. Y., in recognition of the fact that the "Erie Limited," through express between Chicago and New York, now leaves Chicago at 8:35 p.m. instead of 5:35 and therefore accommodates the people of Binghamton at a more convenient hour than formerly.

TO THE
ERIE LIMITED
A TRAIN WHICH IN ITS SCHEDULE, APPOINTMENTS AND PERSONNEL REFLECTS A MANAGEMENT ALIVE TO THE TRUE MEANING OF PUBLIC SERVICE
THIS PLAQUE IS GIVEN BY THE CHAMBER OF COMMERCE OF BINGHAMTON NEW YORK
DECEMBER 1929

The plaque is in the office of President Charles E. Denney at New York City, while the train itself has to be content with framed copies, which are displayed in the observation cars.

Revenues and Expenses for November

Class I railroads in the first eleven months of 1929 had a net railway operating income of $1,201,172,558, which was at the annual rate of return of 5.04 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first eleven months of 1928, their net was $1,099,823,573 or 4.68 per cent.

Operating revenues for eleven months totaled $5,882,985,157, compared with $5,692,846,075 for the same period last year or an increase of 3.3 per cent. Operating expenses amounted to $4,190,869,790, an increase of 1.6 per cent.

Taxes in the eleven months amounted to $397,428,893, compared with $300,585,613 for the same period the year before. For November the tax bill amounted to $30,000,218, a decrease of $4,203,564 under that of the previous year.

Twenty seven Class I railroads operated at a loss in the first eleven months of which 11 were in the Eastern district, 4 in the Southern and 12 in the Western.

Net railway operating income by districts for the first eleven months with the percentage of return based on property investment on an annual basis was as follows:

New England Region	$50,645,448	5.93%
Great Lakes Region	202,038,215	4.97%
Central Eastern Region..	273,555,773	5.52%
Pocahontas Region	85,832,073	9.34%
Total Eastern District..	612,071,509	5.67%
Total Southern District	122,091,988	4.07%
Northwestern Region	141,809,001	4.24%
Central Western Region..	225,268,290	5.01%
Southwestern Region	99,931,770	4.56%
Total Western District	467,009,061	4.65%
Total United States ...	$1,201,172,558	5.04%

Class I railroads for November had a net railway operating income of $86,669,467, at the rate of 3.6 per cent. In November, 1928, their net was $113,520,063, or 4.84 per cent. Operating revenues for November amounted to $499,210,861, a decrease of 6.2 per cent. Operating expenses totaled $372,167,148, a decrease of seven-tenths of one per cent.

Class I railroads in the Eastern district for eleven months had a net of $612,071,509, which was at the rate of 5.67 per cent. For the same period in 1928, their net was $545,389,757, or 5.12 per cent. Operating revenues Eastern district for eleven months totaled $2,930,643,079, an increase of 4.7 per cent, while operating expenses totaled $2,086,984,610, an increase of 2.7 per cent. Railroads in the Eastern district for November had a net of $41,695,130, compared with $55,822,310 in November, 1928.

Class I railroads in the Southern dis-

(*Continued on page 172*)

Operating Statistics of Large Steam Railways—Selected Items for October, 1929, Comp

Region, road and year	Average miles of road operated	Locomotive-miles: Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotives and tenders	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1929	407	225,371	238,471	22,743	5,670	67.9	300,766	116,318	99	23	7.6	32
1928	407	210,331	225,038	23,755	5,600	69.8	289,230	114,412	103	18	3.4	33
Boston & Maine.....1929	2,059	459,724	558,852	68,383	16,054	69.2	848,436	341,434	248	49	16.4	19
1928	2,074	446,134	537,793	76,289	15,084	71.9	770,150	317,469	277	48	14.7	52
N. Y., New H. & Hart...1929	2,104	539,673	631,119	45,063	19,509	68.6	1,052,056	442,903	284	50	15.0	17
1928	2,112	566,510	638,911	37,930	18,407	69.3	988,715	423,807	308	57	15.6	45
Great Lakes Region:												
Delaware & Hudson.....1929	875	376,528	504,732	52,219	12,475	66.3	766,703	378,239	237	34	12.4	67
1928	875	361,468	486,617	49,967	11,622	67.8	726,607	368,425	235	42	15.3	70
Del., Lack. & Western....1929	998	548,078	605,209	71,904	20,197	70.5	1,127,606	491,087	237	54	18.6	22
1928	998	601,864	684,143	82,189	20,881	70.5	1,156,009	498,772	238	57	19.4	7
Erie (inc. Chi. & Erie)....1929	2,316	1,054,729	1,150,578	91,897	47,662	64.0	2,853,283	1,165,755	413	92	18.2	16
1928	2,317	1,041,964	1,142,310	112,279	47,985	66.3	2,829,375	1,187,130	426	109	20.3	8
Lehigh Valley 1929	1,343	583,304	646,899	75,558	19,763	65.4	1,193,959	527,270	280	80	22.3	17
1928	1,346	650,711	717,776	81,563	21,154	65.1	1,274,019	564,399	324	86	21.0	27
Michigan Central 1929	1,822	565,517	566,060	19,063	19,809	62.3	1,119,609	410,453	194	38	16.3	29
1928	1,822	606,747	612,713	18,998	21,774	62.8	1,225,345	449,325	196	51	20.5	21
New York Central.....1929	6,467	2,286,872	2,525,705	208,418	90,094	62.4	5,477,316	2,356,487	990	290	22.6	174
1928	6,459	2,203,184	2,483,846	173,155	87,408	62.5	5,341,318	2,276,246	964	384	28.5	159
New York, Chi. & St. L...1929	1,665	718,486	725,998	7,640	24,048	66.1	1,333,454	516,876	203	50	19.9	9
1928	1,665	645,436	652,613	7,920	23,096	68.0	1,257,242	495,929	227	51	18.4	57
Pere Marquette 1929	2,178	542,512	548,404	6,144	13,839	62.9	819,037	348,499	183	20	9.9	...
1928	2,181	514,232	518,673	4,995	13,998	65.3	807,881	349,592	181	31	14.6	5
Pitts. & Lake Erie.....1929	231	144,695	147,019	1,747	5,236	65.3	403,186	235,086	48	13	21.4	5
1928	231	131,174	132,618	1,389	5,158	63.2	424,645	244,219	56	13	18.8	13
Wabash 1929	2,497	885,476	938,121	18,090	27,544	65.6	1,554,740	588,473	287	73	20.2	14
1928	2,497	850,619	883,347	13,356	26,847	67.1	1,503,287	597,574	285	78	21.5	11
Central Eastern Region:												
Baltimore & Ohio.....1929	5,536	2,113,542	2,551,518	198,407	67,468	62.2	4,492,231	2,105,883	1,051	163	13.4	78
1928	5,534	2,204,375	2,631,621	196,720	68,185	62.7	4,543,278	2,166,440	989	250	20.2	58
Central of New Jersey.....1929	691	300,623	326,435	51,843	9,268	59.4	624,669	297,765	165	36	18.0	12
1928	691	301,932	327,608	50,067	9,178	59.0	626,657	301,312	180	29	13.7	22
Chicago & Eastern Ill.....1929	946	257,462	258,450	3,309	7,352	66.6	439,883	198,587	101	68	40.1	25
1928	945	278,298	278,490	3,495	7,742	64.6	473,967	216,241	103	63	37.9	26
Clev., Cin., Chi. & St. L...1929	2,371	825,930	863,641	20,977	26,511	60.2	1,730,486	783,590	300	108	26.4	9
1928	2,370	790,339	816,855	18,892	26,079	62.1	1,674,760	778,608	324	108	25.0	32
Elgin, Joliet & Eastern...1929	453	141,114	150,384	7,431	4,084	63.7	302,797	157,692	75	12	13.6	...
1928	461	146,662	153,388	7,230	4,291	65.1	316,355	167,320	76	17	17.9	1
Long Island 1929	400	57,375	62,393	18,691	705	56.2	46,323	18,599	44	4	8.8	1
1928	396	59,397	59,793	15,023	864	58.1	55,212	22,134	54	7	11.1	...
Pennsylvania System.....1929	10,738	4,559,674	5,231,240	526,015	167,423	63.9	11,123,296	5,174,778	2,467	347	12.3	347
1928	10,749	4,455,467	5,078,096	469,123	160,517	64.9	10,518,774	4,930,514	2,752	334	10.8	573
Reading 1929	1,451	665,784	702,694	53,337	19,578	63.4	1,325,976	665,925	333	58	6.1	31
1928	1,417	713,502	779,552	64,534	20,624	64.5	1,381,773	713,148	336	74	4.7	32
Pocahontas Region:												
Chesapeake & Ohio.....1929	2,735	1,203,553	1,279,399	52,290	44,146	56.1	3,587,623	1,933,726	516	91	14.0	44
1928	2,728	1,214,433	1,304,363	50,019	42,922	56.4	3,463,769	1,863,046	538	88	14.0	47
Norfolk & Western.....1929	2,230	927,716	1,053,378	61,916	36,612	58.6	3,097,182	1,671,301	455	45	8.9	77
1928	2,231	923,340	1,084,420	41,050	36,025	59.3	2,952,388	1,580,177	511	56	9.9	127
Southern Region:												
Atlantic Coast Line.....1929	5,153	592,925	596,351	9,536	15,182	63.6	826,407	306,903	414	51	11.0	105
1928	5,127	628,097	631,329	10,013	16,634	63.0	897,901	337,843	440	50	10.2	102
Central of Georgia.....1929	1,900	287,484	292,288	5,459	7,704	73.1	401,054	170,921	132	21	13.5	5
1928	1,898	276,847	280,023	3,989	7,195	75.4	361,191	152,039	142	20	12.5	12
Ill. Cent. (inc. Y. & M. V.)1929	6,695	2,100,861	2,121,543	32,275	60,006	64.5	3,817,969	1,637,387	738	107	12.7	13
1928	6,715	2,057,881	2,069,735	30,245	58,837	64.0	3,752,507	1,620,418	737	110	13.0	18
Louisville & Nashville.....1929	5,247	1,695,305	1,799,984	54,334	37,857	59.4	2,619,413	1,257,200	575	118	17.0	28
1928	5,242	1,749,468	1,830,640	57,722	39,274	60.1	2,708,354	1,319,967	628	103	14.0	48
Seaboard Air Line.....1929	4,475	533,679	547,628	5,292	13,918	67.4	759,351	302,675	262	48	15.5	23
1928	4,485	564,712	578,177	7,667	14,714	67.0	807,629	324,191	266	64	19.4	30
Southern 1929	6,679	1,589,284	1,624,064	34,433	41,281	68.0	2,225,032	916,305	821	130	13.6	155
1928	6,679	1,564,001	1,596,585	32,772	40,315	68.0	2,183,168	904,035	842	116	12.1	124
Northwestern Region:												
Chi. & North Western....1929	8,450	1,676,617	1,777,171	38,466	45,887	62.2	2,722,982	1,078,345	729	94	11.5	35
1928	8,463	1,661,781	1,749,494	28,824	45,562	62.8	2,686,054	1,070,709	762	130	14.6	60
Chi., Milw., St. P. & Pac..1929	11,244	1,879,045	2,025,580	109,865	57,810	64.2	3,442,190	1,464,237	794	146	15.5	129
1928	11,248	1,952,269	2,098,335	121,131	60,599	65.2	3,594,641	1,568,835	778	145	15.7	109
Chi., St. P., Minn. & Om..1929	1,724	326,184	353,440	14,946	7,190	67.7	410,682	168,559	143	27	15.9	31
1928	1,724	349,938	377,027	18,550	7,947	67.2	443,902	189,785	156	29	15.7	21
Great Northern 1929	8,340	1,149,777	1,192,109	82,506	45,650	63.1	2,910,036	1,320,588	504	103	16.9	29
1928	8,303	1,451,159	1,498,578	98,391	54,695	63.2	3,563,423	1,642,142	547	89	14.0	14
Minn., St. P. & S. St. M...1929	4,357	528,126	545,753	9,765	16,019	68.4	880,777	395,104	189	39	17.0	14
1928	4,358	635,205	659,164	8,550	18,802	66.9	1,070,966	502,908	233	25	9.7	14
Northern Pacific 1929	6,476	940,394	999,742	57,706	32,431	68.9	1,835,772	799,683	437	106	19.5	35
1928	6,477	1,067,677	1,139,422	66,175	37,045	68.4	2,150,425	957,885	471	103	18.0	15
Oreg.-Wash. R. R. & Nav..1929	2,246	228,129	242,943	19,623	7,123	70.8	410,258	182,646	137	6	4.0	28
1928	2,246	253,786	268,043	19,812	7,765	67.4	466,779	206,930	138	10	6.5	13
Central Western Region:												
Atch., Top. & S. Fe (incl. 1929	11,232	2,438,150	2,689,489	163,838	84,642	63.4	5,139,185	1,738,779	824	140	14.5	66
P. & S. F.).....1928	11,193	2,297,349	2,553,834	180,984	81,251	64.0	4,847,214	1,651,531	884	139	13.6	104
Chicago & Alton.....1929	1,000	316,197	341,832	2,533	8,057	64.5	467,426	180,952	126	20	13.6	12
1928	1,000	359,751	398,205	4,377	9,157	65.1	540,164	222,909	120	31	20.6	4
Chi., Burl. & Quincy.....1929	9,316	1,699,263	1,790,518	80,857	55,427	61.8	3,307,400	1,480,457	680	157	18.8	13
1928	9,317	1,761,384	1,826,549	72,098	57,644	63.1	3,398,222	1,536,142	713	182	20.3	28
Chi., Rock I. & Pacific....1929	7,592	1,588,310	1,654,001	14,539	40,782	63.6	2,435,114	1,002,088	550	119	17.8	52
1928	7,564	1,499,319	1,566,881	19,580	39,961	65.3	2,302,013	959,845	559	113	16.8	45
Denver & R. G. Wn.....1929	2,564	459,911	542,327	83,191	12,614	65.5	720,341	288,424	230	42	15.3	10
1928	2,563	461,331	538,702	82,659	12,167	62.2	723,012	281,916	245	29	10.6	6
Oregon Short Line.....1929	2,539	476,454	511,304	53,393	14,250	64.6	876,066	348,673	188	6	3.2	19
1928	2,539	446,295	480,602	49,357	13,440	62.2	837,913	332,044	184	12	5.9	12
So. Pacific—Pacific Lines..1929	8,966	1,965,327	2,163,682	316,064	64,005	66.0	3,861,224	1,411,533	804	145	15.3	70
1928	8,735	2,000,783	2,191,463	307,388	63,813	65.7	3,813,281	1,405,417	789	157	16.6	51
Union Pacific 1929	3,765	1,895,561	1,954,595	93,888	65,180	64.7	3,843,169	1,291,064	467	21	4.3	37
1928	3,765	1,894,223	1,947,968	103,349	65,063	63.4	3,880,999	1,279,387	471	17	3.5	27
Southwestern Region:												
Gulf, Colo. & S. Fe.....1929	1,933	289,668	303,764	7,582	10,508	64.3	640,429	271,660	112	18	13.5	11
1928	1,933	267,242	275,788	8,798	9,452	65.1	554,470	231,615	127	16	11.3	33
Mo.-Kans.-Texas Lines.....1929	3,176	459,631	468,567	10,340	16,677	61.0	970,171	378,063	194	46	19.1	71
1928	3,176	522,361	532,529	12,653	18,019	61.0	1,052,701	414,234	187	57	23.4	43
Missouri Pacific 1929	7,417	1,663,178	1,738,355	51,266	49,957	65.6	2,966,434	1,252,768	577	75	11.5	113
1928	7,433	1,530,438	1,593,831	47,367	45,520	66.3	2,645,584	1,122,547	538	96	15.2	11
St. Louis-San Francisco....1929	5,213	983,787	998,438	12,049	24,372	63.4	1,441,000	594,848	419	58	12.2	15
1928	5,221	906,617	922,146	10,451	22,289	64.9	1,297,072	547,243	402	70	14.9	31
Texas & New Orleans.....1929	4,709	819,272	823,825	3,159	20,034	64.9	1,176,620	461,256	281	49	14.8	42
1928	4,708	811,071	812,284	2,259	19,307	67.1	1,083,706	434,226	280	59	17.3	41
Texas & Pacific.....1929	1,950	445,379	445,379	8,381	12,458	61.6	771,089	300,463	194	19	9.1	29
1928	2,015	554,197	554,197	4,163	15,204	59.5	980,421	392,778	200	16	7.2	19

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revise.

ared with October, 1928, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany.....1929	2,796	5,223	8,019	7.6	18,641	1,335	516	20.5	468	33.6	9,217	168	69.5
1928	2,112	5,864	7,976	3.4	19,102	1,375	544	20.4	463	32.4	9,067	160	66.6
Boston & Maine.....1929	7,563	15,552	23,115	2.5	22,280	1,846	743	21.3	476	32.4	5,349	105	68.3
1928	9,194	13,775	22,969	4.1	20,641	1,726	712	21.0	446	29.5	4,938	109	61.1
N. Y., New H. & Hart..1929	13,811	21,709	35,520	8.1	23,438	1,949	821	22.7	402	25.8	6,790	107	65.4
1928	14,891	21,824	36,715	8.0	21,628	1,745	748	23.0	372	23.3	6,472	108	59.9
Great Lakes Region:													
Delaware & Hudson.....1929	7,536	6,652	14,188	3.9	25,204	2,036	1,005	30.3	860	42.8	13,944	124	66.4
1928	7,272	6,954	14,226	3.5	23,862	2,010	1,019	31.7	835	38.9	13,583	136	62.5
Del., Lack. & Western...1929	14,027	11,324	25,351	4.1	25,272	2,057	896	24.3	625	36.5	15,871	135	75.1
1928	13,745	10,509	24,254	3.4	23,267	1,921	829	23.9	663	39.4	16,119	134	83.7
Erie (inc. Chi. & Erie)..1929	27,690	26,812	54,502	4.9	34,840	2,705	1,105	24.5	690	44.1	16,236	109	79.4
1928	26,200	25,302	51,502	3.9	33,896	2,715	1,139	24.7	744	45.3	16,529	114	75.6
Lehigh Valley 1929	18,306	12,318	30,624	5.8	27,523	2,047	904	26.7	555	31.8	12,660	147	64.7
1928	20,349	13,625	33,974	9.8	26,008	1,958	867	26.7	536	30.9	13,528	144	62.9
Michigan Central.....1929	15,595	16,795	32,390	5.1	31,670	1,980	726	20.7	409	31.7	7,267	109	81.6
1928	14,797	20,131	34,928	5.6	30,711	2,020	741	20.6	415	32.0	7,955	102	82.7
New York Central.....1929	57,875	82,796	140,671	4.5	30,995	2,395	1,030	26.2	540	33.1	11,755	101	68.9
1928	56,021	77,309	133,330	6.7	30,865	2,424	1,033	26.0	551	33.8	11,368	105	63.6
New York, Chi. & St. L..1929	11,846	13,579	25,425	6.3	25,661	1,856	719	21.5	656	46.1	10,016	106	93.6
1928	11,508	12,236	23,744	6.4	26,900	1,948	768	21.5	674	46.1	9,610	104	76.7
Pere Marquette 1929	9,480	11,108	20,588	3.3	20,611	1,510	642	25.2	546	34.5	5,162	105	88.3
1928	8,353	11,638	19,991	4.3	19,475	1,571	680	25.0	564	34.6	5,172	103	79.9
Pitts. & Lake Erie.....1929	9,351	11,355	20,706	6.2	32,301	2,786	1,625	44.9	366	12.5	32,790	110	77.9
1928	10,343	9,437	19,780	11.2	34,282	3,237	1,862	47.3	398	13.3	34,064	93	62.8
Wabash 1929	14,256	15,911	30,167	2.4	27,673	1,756	665	21.4	629	44.9	7,604	116	85.8
1928	13,288	14,807	28,095	3.0	28,158	1,767	703	22.3	686	45.9	7,720	118	79.8
Central Eastern Region:													
Baltimore & Ohio.....1929	62,953	39,969	102,922	5.0	23,516	2,125	996	31.2	660	34.0	12,270	143	73.1
1928	66,430	37,871	104,301	5.8	22,612	2,061	983	31.8	670	33.7	12,627	146	73.6
Central of New Jersey...1929	13,659	12,842	26,501	6.9	24,801	2,078	990	32.1	362	19.0	13,910	132	60.7
1928	15,992	12,588	28,580	5.9	21,835	2,075	998	32.8	340	17.5	14,066	142	58.3
Chicago & Eastern Ill....1929	11,630	4,696	16,326	44.3	25,810	1,709	771	27.0	392	21.8	6,770	123	50.2
1928	11,916	4,374	16,290	38.7	25,156	1,703	777	27.9	428	23.7	7,380	125	54.9
Clev., Cin., Chi. & St. L..1929	16,996	21,838	38,834	5.1	29,240	2,095	949	29.6	651	36.6	10,661	115	69.9
1928	16,358	21,663	38,021	5.1	27,984	2,119	985	29.9	661	35.6	10,596	112	62.4
Elgin, Joliet & Eastern..1929	8,087	8,009	16,096	6.1	14,731	2,146	1,117	38.6	316	12.9	11,224	128	58.5
1928	8,368	7,756	16,124	5.2	16,044	2,157	1,141	39.0	335	13.2	11,721	123	56.3
Long Island 1929	713	6,537	7,250	1.1	5,761	807	324	26.4	83	5.6	1,497	358	54.5
1928	1,504	6,269	7,773	1.3	5,634	930	370	25.6	92	6.2	1,804	299	39.6
Pennsylvania System.....1929	192,415	97,060	289,475	4.8	27,827	2,439	1,135	30.9	577	29.2	15,545	122	66.0
1928	198,570	92,792	291,362	6.2	26,163	2,361	1,107	30.7	546	27.4	14,797	121	58.0
Reading 1929	22,042	18,058	40,100	6.1	21,280	1,992	1,000	34.0	536	24.8	14,800	143	62.4
1928	24,130	16,830	40,960	4.7	20,274	1,937	1,000	34.6	562	25.2	16,241	144	66.5
Pocahontas Region:													
Chesapeake & Ohio.....1929	27,434	13,906	41,340	2.2	35,968	2,981	1,607	43.8	1,509	61.4	22,806	85	70.8
1928	26,399	13,601	40,000	2.6	34,636	2,852	1,534	43.4	1,502	61.4	22,029	88	69.9
Norfolk & Western.....1929	26,408	10,962	37,370	1.0	44,361	3,339	1,802	45.6	1,443	53.9	24,181	116	72.0
1928	26,134	10,502	36,636	1.5	42,676	3,198	1,711	43.9	1,391	53.5	22,843	123	64.0
Southern Region:													
Atlantic Coast Line.....1929	20,809	7,144	27,953	5.3	19,608	1,394	518	20.2	354	27.6	1,921	112	42.0
1928	20,602	8,569	29,171	5.9	18,855	1,430	538	20.3	374	29.2	2,126	105	42.2
Central of Georgia.....1929	4,140	5,214	9,354	4.1	19,883	1,395	595	22.2	589	36.3	2,902	131	63.2
1928	3,715	5,254	8,969	5.1	18,383	1,305	549	21.1	547	34.3	2,584	135	56.6
Ill. Cent. (inc. Y.&M. V.)1929	36,991	28,853	65,844	3.2	24,234	1,817	779	27.3	802	45.6	7,890	130	82.2
1928	37,434	26,710	64,144	4.9	23,792	1,823	787	27.5	815	46.2	7,785	128	80.0
Louisville & Nashville....1929	40,029	16,035	56,064	11.6	20,659	1,545	742	33.2	723	36.7	7,729	140	86.3
1928	39,643	18,003	57,646	10.8	19,679	1,548	754	33.6	739	36.6	8,123	133	83.3
Seaboard Air Line.....1929	14,230	7,516	21,746	6.7	18,355	1,423	567	21.7	449	30.6	2,182	129	57.5
1928	14,618	8,829	23,447	8.2	18,021	1,430	574	22.0	446	30.2	2,332	132	57.2
Southern 1929	46,961	20,586	67,547	12.7	19,642	1,400	577	22.2	438	29.0	4,426	152	56.3
1928	45,686	21,157	66,843	8.9	18,379	1,396	578	22.4	436	28.6	4,367	154	54.8
Northwestern Region:													
Chi. & North Western...1929	46,096	32,799	78,895	7.1	21,283	1,624	643	23.5	441	30.2	4,116	126	71.1
1928	43,755	34,353	78,108	6.0	21,555	1,616	644	23.5	442	29.9	4,081	121	64.3
Chi., Mil., St. P. & Pac..1929	50,510	29,652	80,162	2.7	23,852	1,832	779	25.3	589	36.2	4,201	123	73.3
1928	49,653	28,126	77,779	3.0	23,615	1,841	804	25.9	651	38.5	4,499	125	77.6
Chi., St. P., Minn. & Om..1929	2,491	9,564	12,055	5.6	16,686	1,259	517	23.4	451	28.4	3,155	122	69.7
1928	2,548	10,280	12,828	6.0	16,220	1,269	542	23.9	477	29.8	3,552	119	69.2
Great Northern 1929	40,268	17,208	57,476	4.0	31,017	2,531	1,149	28.9	741	40.6	5,108	118	67.8
1928	40,835	22,048	62,883	3.4	28,235	2,456	1,132	30.0	842	44.4	6,380	121	81.0
Minn., St. P. & S. St. M..1929	19,265	7,523	26,788	2.8	20,409	1,668	748	24.7	477	28.3	2,925	97	78.6
1928	19,614	8,860	28,474	3.3	19,248	1,686	792	26.7	571	31.9	3,723	98	83.5
Northern Pacific.....1929	35,783	9,084	44,867	7.2	25,437	1,952	850	24.7	575	33.9	3,983	144	62.8
1928	35,610	13,488	49,098	6.0	25,095	2,014	897	25.9	629	35.6	4,771	139	67.7
Ore.-Wash. R.R. & Nav..1929	7,250	4,254	11,504	3.6	23,210	1,798	801	25.6	512	28.2	2,624	161	59.4
1928	7,407	5,390	12,797	5.0	23,711	1,839	815	26.6	522	29.1	2,973	162	62.9
Central Western Region:													
Atch., Top. & S. Fe (incl. 1929	53,097	22,822	75,919	5.2	32,680	2,108	713	20.5	739	56.7	4,994	104	95.5
P. & S. F.).....1928	51,299	22,257	73,556	5.8	31,516	2,110	719	20.3	724	55.7	4,760	108	86.3
Chicago & Alton.....1929	8,717	4,882	13,599	4.7	23,016	1,478	572	22.5	429	29.6	5,839	140	76.0
1928	8,555	5,163	13,718	4.7	21,577	1,501	620	24.3	524	33.1	7,192	136	85.9
Chi., Burl. & Quincy....1929	39,763	26,467	66,230	4.3	26,218	1,946	871	26.7	721	43.7	5,126	121	72.1
1928	40,606	28,825	69,431	4.6	25,161	1,929	872	26.6	714	42.5	5,319	122	68.4
Chi., Rock I. & Pacific..1929	27,619	25,770	53,389	5.0	20,520	1,533	631	24.6	605	38.7	4,258	139	80.5
1928	26,025	24,204	50,229	6.2	19,960	1,535	640	24.0	616	39.3	4,093	139	76.2
Denver & R. G. Wn.....1929	10,636	7,327	17,963	2.9	18,470	1,566	627	22.9	518	34.6	3,629	172	74.4
1928	10,300	7,100	17,400	2.3	17,496	1,567	611	23.2	523	36.3	3,548	181	73.3
Oregon Short Line.....1929	7,894	6,055	13,949	4.6	24,390	1,839	732	24.5	806	51.0	4,430	120	93.7
1928	8,003	5,961	13,964	4.1	24,473	1,877	744	24.7	767	49.9	4,219	115	87.4
So. Pacific—Pacific Lines.1929	38,342	29,225	67,567	5.9	25,093	1,965	718	22.1	674	46.3	5,079	118	84.3
1928	38,011	28,680	66,691	6.3	23,739	1,906	702	22.0	680	47.0	5,190	119	85.3
Union Pacific 1929	18,488	12,745	31,233	5.0	38,302	2,027	681	19.8	1,333	104.0	11,060	106	135.3
1928	16,992	15,985	32,977	8.3	36,642	2,049	675	19.7	1,251	100.5	10,961	109	135.6
Southwestern Region:													
Gulf, Colo. & S. Fe.....1929	11,061	6,383	17,444	3.7	31,956	2,211	938	25.9	502	30.2	4,533	90	77.6
1928	9,136	5,158	14,294	3.7	27,562	2,075	867	24.5	523	32.8	3,865	94	63.9
Mo.-Kans.-Texas Lines...1929	14,975	8,715	23,690	5.9	28,509	2,111	823	22.7	515	37.2	3,839	90	64.5
1928	14,855	9,404	24,259	6.7	26,478	2,015	793	23.0	551	39.3	4,207	91	71.8
Missouri Pacific.....1929	26,529	30,810	57,339	4.2	24,107	1,784	753	25.1	705	42.8	5,449	126	88.6
1928	25,640	25,698	51,338	5.3	23,034	1,729	733	24.7	705	43.2	4,872	124	83.5
St. Louis-San Francisco..1929	20,525	13,724	34,249	3.1	19,157	1,465	605	24.4	560	36.2	3,681	142	68.3
1928	20,706	12,507	33,213	3.4	18,648	1,431	604	24.6	532	33.4	3,381	146	63.7
Texas & New Orleans...1929	10,297	16,783	27,080	3.7	19,633	1,436	563	23.0	549	36.8	3,160	94	81.1
1928	10,587	17,134	27,721	5.1	18,656	1,336	535	22.5	505	33.5	2,975	98	77.7
Texas & Pacific.....1929	4,981	8,785	13,766	5.0	22,462	1,731	675	24.1	704	47.4	4,971	90	68.7
1928	5,931	10,646	16,577	3.9	21,667	1,769	709	25.8	764	49.7	6,288	92	83.5

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1929

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Akron, Canton & Youngstown	Nov.	171	$234,202	$104	$246,113	$48,346	$25,090	$14,647	$68,586	$16,881	$173,550	70.5	$72,563	$49,499	$18,180	$63,518
	11 mos.	171	3,461,785	1,565	3,595,654	500,242	295,468	154,213	863,894	194,989	2,004,356	55.7	1,591,298	1,343,172	987,029	693,117
Atchison, Topeka & Santa Fe	Nov.	9,663	14,906,585	2,327,143	18,918,948	2,607,580	3,396,373	439,509	4,962,308	436,083	11,746,762	62.1	7,172,186	6,069,351	6,061,867	5,795,474
	11 mos.	9,663	154,723,092	31,895,752	206,235,788	30,580,254	37,322,757	4,582,875	55,329,260	4,864,517	132,236,746	64.1	73,999,042	56,663,294	56,626,470	43,946,828
Gulf, Colorado & Santa Fe	Nov.	1,944	2,728,761	159,547	3,068,957	386,810	431,562	58,491	707,686	83,092	1,661,913	54.2	1,407,044	1,232,127	1,105,979	904,644
	11 mos.	1,944	23,742,113	1,947,318	27,512,857	5,528,679	4,910,068	619,653	7,773,733	817,926	19,533,883	71.0	7,978,974	6,743,247	5,398,617	4,620,641
Panhandle & Santa Fe	Nov.	1,568	1,626,748	112,135	1,842,948	234,790	282,698	20,725	490,138	45,516	1,070,398	58.1	772,550	694,302	574,811	665,094
	11 mos.	1,540	14,729,363	1,164,037	17,053,223	3,249,603	2,749,094	217,804	4,487,462	401,691	10,921,573	64.0	6,131,650	5,678,214	4,287,420	4,267,133
Atlanta & West Point	Nov.	93	155,971	47,079	236,634	23,304	38,675	12,381	89,401	12,091	180,866	76.4	55,768	36,323	22,398	26,948
	11 mos.	93	1,782,430	529,635	2,677,125	358,583	458,581	136,199	1,009,846	148,899	2,163,685	80.8	513,440	355,748	202,637	312,685
Western Ry. of Alabama	Nov.	133	158,846	52,202	241,607	34,140	44,782	12,592	80,887	12,514	189,422	78.3	52,185	27,106	35,301	15,621
	11 mos.	133	1,922,527	568,259	2,788,006	487,435	531,497	139,971	911,704	147,824	2,263,415	81.2	524,591	347,422	390,982	659,103
Atlanta, Birmingham & Coast	Nov.	639	284,901	20,157	346,770	96,326	83,872	27,053	145,456	17,272	381,525	110.0	—34,755	—44,895	—55,780	—5,939
	11 mos.	639	3,603,349	243,659	4,364,591	1,011,572	920,231	309,442	1,684,728	203,216	4,250,700	97.4	113,891	—65,606	—199,379	—144,645
Atlantic Coast Line	Nov.	5,152	3,834,436	681,009	5,090,634	794,653	1,139,421	171,902	1,948,287	165,802	4,249,392	83.5	841,242	399,763	503,019	1,156,292
	11 mos.	5,151	49,082,802	11,205,972	66,561,051	9,413,531	12,735,108	1,800,823	22,654,717	1,916,544	49,086,979	73.7	17,474,072	11,712,770	11,917,509	8,609,271
Charleston & Western Carolina	Nov.	342	228,647	9,269	251,024	38,928	35,657	7,625	92,479	7,511	182,200	72.6	68,824	61,228	49,769	64,045
	11 mos.	342	2,701,328	113,255	2,935,793	610,182	417,975	78,143	1,049,945	79,788	2,235,567	76.1	700,226	451,528	428,277	483,919
Baltimore & Ohio	Nov.	5,639	16,441,964	1,513,544	19,306,165	2,278,748	4,317,167	492,250	6,996,200	677,071	14,928,201	77.3	4,377,964	3,651,282	3,227,244	5,119,256
	11 mos.	5,639	191,344,081	20,381,956	228,294,606	27,620,301	47,684,439	5,452,607	76,436,398	7,563,803	166,806,100	73.1	61,488,506	50,225,427	46,742,207	45,695,035
Baltimore & Ohio Chic. Term	Nov.	82	.....	.....	336,495	41,151	40,364	1,917	183,223	17,998	288,201	85.7	48,294	—11,480	89,963	140,840
	11 mos.	82	.....	.....	4,103,147	471,020	490,278	26,144	1,996,632	197,582	3,226,276	78.6	876,871	176,681	1,316,924	1,313,885
Staten Island Rapid Transit	Nov.	23	84,452	120,178	216,406	8,715	18,247	2,007	102,968	15,608	147,545	68.2	68,861	53,861	54,954	49,192
	11 mos.	23	816,837	1,478,950	2,441,623	243,567	188,189	22,843	1,172,950	174,128	1,801,677	73.8	639,946	448,129	383,289	326,935
Bangor & Aroostook	Nov.	619	603,559	32,117	664,544	121,074	101,824	4,424	163,427	24,139	416,934	62.7	247,610	194,167	186,666	149,423
	11 mos.	619	6,420,670	501,802	7,370,085	1,216,770	1,378,087	62,775	1,749,738	291,102	4,726,500	64.1	2,643,585	2,058,105	2,159,000	1,799,494
Belt Ry. Co. of Chicago	Nov.	48	.....	.....	657,851	37,307	85,287	3,447	304,569	11,385	441,995	67.2	215,856	161,921	142,747	182,379
	11 mos.	48	.....	.....	7,697,578	701,427	836,602	41,433	3,432,205	161,684	5,173,351	67.2	2,524,227	1,889,508	1,651,086	1,623,577
Bessemer & Lake Erie	Nov.	227	1,299,885	5,484	1,326,676	89,185	333,695	13,847	314,086	34,771	785,457	59.2	541,219	421,506	443,380	517,771
	11 mos.	227	16,867,510	80,397	17,206,032	1,218,854	3,630,036	155,747	3,617,915	389,375	8,991,266	52.3	8,214,766	7,123,519	7,342,153	5,504,737
Bingham & Garfield	Nov.	33	41,170	.....	42,144	6,193	10,322	1,517	8,232	4,529	30,922	73.4	11,222	3,185	20,706	20,355
	11 mos.	33	486,941	.....	511,577	88,881	64,458	17,070	118,512	49,337	339,824	66.4	171,753	45,767	229,917	192,462
Boston & Maine	Nov.	2,077	4,217,122	1,146,847	6,214,072	1,608,805	946,279	80,915	2,275,903	243,023	5,177,273	83.3	1,036,799	1,018,167	720,551	967,628
	11 mos.	2,077	47,945,940	14,885,119	72,314,322	12,859,033	13,036,763	1,003,628	24,797,115	2,406,694	54,360,522	75.2	17,953,800	14,676,995	12,032,728	11,882,809
Brooklyn Eastern Dist. Term	Nov.	11	108,417	.....	112,338	9,480	19,549	114	39,072	6,950	75,174	66.9	37,164	30,604	30,604	40,810
	11 mos.	11	1,292,912	.....	1,324,599	105,154	174,596	6,198	457,323	72,936	816,207	61.6	508,392	427,031	427,031	439,408
Buffalo & Susquehanna	Nov.	253	133,635	650	143,478	34,869	47,517	1,726	45,977	7,604	137,693	96.0	5,785	3,685	19,392	37,464
	11 mos.	253	1,473,500	9,871	1,610,174	328,567	562,222	20,996	489,530	85,011	1,486,326	92.3	123,848	119,841	300,146	268,696
Buffalo, Rochester & Pittsburgh	Nov.	601	1,282,445	60,871	1,392,298	146,259	383,638	37,540	534,950	43,261	1,144,702	82.2	247,596	182,581	208,254	223,536
	11 mos.	601	14,987,733	764,938	16,374,279	2,146,531	4,539,557	373,197	5,837,795	484,482	13,390,665	81.8	2,983,614	2,442,791	2,721,337	2,601,279
Canadian Pacific Lines in Maine	Nov.	233	87,173	23,430	123,875	44,210	30,388	7,282	73,237	3,899	159,016	128.3	—35,141	—50,041	—60,928	—20,547
	11 mos.	233	2,043,051	337,264	2,523,168	617,542	541,176	78,980	1,137,662	45,104	2,420,464	95.9	102,704	—57,596	—284,040	—323,743
Canadian Pacific Lines in Vermont	Nov.	85	97,040	23,407	143,594	32,638	24,558	1,878	78,875	2,299	140,241	97.6	3,353	—834	—37,332	—35,936
	11 mos.	85	1,303,182	394,711	1,953,630	393,156	322,469	20,615	1,010,768	26,075	1,771,953	90.7	181,677	137,123	—241,896	—1,089,523
Central of Georgia	Nov.	1,944	1,535,427	235,611	1,972,280	263,322	357,768	74,321	756,351	85,647	1,545,575	78.4	426,705	302,243	337,445	481,829
	11 mos.	1,944	17,726,502	3,145,560	23,166,413	3,227,132	4,053,295	776,016	8,546,152	957,111	17,690,856	76.4	5,475,557	4,009,538	4,134,550	4,081,745
Central New Jersey	Nov.	690	3,679,370	665,032	4,646,958	478,633	984,702	64,702	1,794,690	129,022	3,479,041	74.9	1,167,917	811,378	726,508	845,263
	11 mos.	690	41,403,119	8,467,019	53,492,950	5,300,188	11,061,792	686,463	19,991,091	1,439,554	38,795,742	72.5	14,697,208	9,974,983	8,629,540	8,924,175
Central Vermont	Nov.	419	521,078	66,378	652,149	90,788	98,486	18,533	296,884	24,576	531,364	81.5	120,785	103,440	113,029	89,814
	11 mos.	416	6,184,659	1,095,028	8,273,483	1,582,842	1,084,621	203,747	3,224,310	279,538	6,398,783	77.3	1,874,700	1,682,475	1,734,032	—1,213,967
Chesapeake & Ohio	Nov.	2,735	9,777,409	451,463	10,683,513	1,439,632	2,342,133	134,074	2,701,756	305,373	6,927,872	64.8	3,755,641	3,113,745	3,270,253	2,902,827
	11 mos.	2,732	108,467,380	5,860,161	119,205,488	17,491,164	26,428,627	1,497,888	29,749,577	3,236,860	78,587,628	65.9	40,617,860	32,916,197	35,024,098	32,669,496
Chicago & Alton	Nov.	1,028	1,403,477	407,561	2,069,059	275,853	466,209	85,480	837,124	62,111	1,717,797	83.0	351,262	236,462	87,008	164,956
	11 mos.	1,028	18,434,359	4,954,065	26,509,291	3,210,043	5,777,995	867,323	9,590,495	672,942	20,235,269	76.3	6,274,022	5,034,374	3,115,433	2,393,442
Chicago & Eastern Illinois	Nov.	946	1,517,141	233,121	1,918,221	192,068	432,088	82,557	759,799	71,359	1,552,500	80.9	365,721	205,750	54,902	326,445
	11 mos.	946	18,069,776	3,081,639	23,422,620	2,843,943	4,868,823	908,688	8,559,640	782,763	18,119,138	77.4	5,303,482	3,774,643	2,112,693	1,891,804
Chicago & Illinois Midland	Nov.	131	244,527	4,745	257,679	27,692	43,314	20,025	71,151	16,803	176,541	68.5	81,138	75,113	73,833	50,109
	11 mos.	131	2,606,265	58,789	2,756,380	404,004	579,187	212,298	770,553	194,185	2,155,939	78.2	600,441	507,046	493,024	422,531
Chicago & North Western	Nov.	8,475	8,333,794	1,674,973	11,410,564	1,972,350	2,166,248	221,482	4,528,568	392,799	9,328,475	81.8	2,082,089	1,180,698	933,428	963,348
	11 mos.	8,466	104,816,894	21,796,468	143,827,327	19,859,654	26,325,713	2,420,470	52,207,811	4,241,081	105,640,245	73.4	38,187,082	28,860,495	26,153,816	23,175,667

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Chicago, Burlington & Quincy	Nov.	9,366	$10,104,275	$1,301,809	$12,714,541	$2,262,896	$2,414,948	$240,861	$4,384,622	$370,163	$9,727,649	76.5	$2,986,892	$2,234,777	$1,811,081	$2,407,613
	11 mos.	9,373	117,346,810	17,315,146	150,055,068	22,824,208	23,562,107	3,064,701	47,639,726	4,094,391	102,203,443	68.1	47,851,625	35,963,546	32,821,927	30,807,823
Chicago Great Western	Nov.	1,495	1,769,025	190,017	2,167,610	291,522	323,792	85,675	835,296	57,370	1,598,272	73.7	569,338	444,138	243,729	202,166
	11 mos.	1,495	19,223,259	2,579,665	23,867,180	3,166,940	4,065,948	912,414	9,513,510	633,143	18,397,645	77.1	5,469,535	4,464,067	2,580,478	2,268,504
Chicago, Indianapolis & Louisville	Nov.	650	1,066,157	131,759	1,322,522	136,198	310,264	38,705	504,499	37,456	1,039,518	78.6	283,004	203,002	79,431	188,941
	11 mos.	650	13,082,753	1,773,343	16,692,939	1,718,605	3,439,432	440,830	5,823,697	408,175	11,967,107	71.7	4,725,832	3,720,997	2,366,308	2,436,351
Chicago, Mil., St. Paul & Pacific	Nov.	11,247	10,352,567	1,162,321	12,903,562	1,890,158	2,518,003	307,042	4,860,598	443,170	10,059,609	78.0	2,843,953	2,155,392	1,713,230	2,312,593
	11 mos.	11,248	127,756,965	15,348,432	159,135,627	26,547,918	28,530,423	3,567,558	55,555,174	4,234,643	119,183,115	74.9	39,952,512	31,008,641	24,817,707	26,902,218
Chicago River & Indiana	Nov.	20	.....	.....	581,217	36,599	52,773	416	203,469	15,879	309,136	53.2	272,081	225,419	305,540	288,066
	11 mos.	20	.....	.....	6,537,833	503,228	581,801	5,558	2,330,847	165,363	3,586,797	54.9	2,951,036	2,451,442	3,394,281	3,097,461
Chicago, Rock Island & Pacific	Nov.	7,592	8,158,994	1,425,984	10,662,360	1,680,873	2,130,868	268,889	4,010,129	358,874	8,528,909	80.0	2,133,451	1,579,108	1,145,979	1,710,325
	11 mos.	7,564	99,294,890	16,981,858	128,224,553	18,065,275	24,440,945	2,918,905	45,493,410	3,904,200	95,711,751	74.6	32,512,802	25,127,634	19,970,247	20,494,945
Chicago, Rock Island & Gulf	Nov.	566	627,028	66,247	741,879	73,362	71,094	19,578	211,408	19,452	399,209	53.8	342,670	290,712	253,050	269,971
	11 mos.	540	6,263,511	699,299	7,541,696	749,279	666,784	233,889	2,286,820	207,730	4,178,837	55.4	3,362,859	3,025,185	2,579,534	1,722,094
Chic., St. Paul, Minn. & Omaha	Nov.	1,746	1,636,146	266,099	2,120,849	298,344	396,164	41,504	946,542	84,068	1,776,317	83.8	344,532	242,713	158,658	198,939
	11 mos.	1,746	19,019,340	3,710,592	25,046,692	3,570,856	4,395,623	437,824	10,325,766	902,561	19,762,966	78.9	5,283,726	4,013,073	3,245,854	2,065,056
Clinchfield Railroad	Nov.	309	506,357	10,927	529,133	56,365	148,013	23,007	112,990	17,968	357,480	67.6	171,653	131,653	224,125	303,243
	11 mos.	309	5,999,880	151,212	6,281,520	679,749	1,592,571	242,442	1,289,652	203,779	4,006,980	63.8	2,274,540	1,514,376	2,504,232	2,761,458
Colorado & Southern	Nov.	1,035	1,040,250	83,290	1,216,368	155,848	115,672	15,059	388,091	42,620	720,101	59.2	496,267	394,730	363,877	331,063
	11 mos.	1,035	9,156,231	1,048,085	11,191,574	1,811,376	2,247,079	172,153	3,803,005	463,295	8,528,906	76.2	2,662,668	1,840,831	1,540,414	1,797,140
Ft. Worth & Denver City	Nov.	696	856,859	143,041	1,072,037	130,251	154,417	18,702	305,101	39,468	652,198	60.8	419,839	372,644	361,944	489,793
	11 mos.	696	9,061,059	1,591,140	11,425,925	1,470,555	1,814,111	242,313	3,284,214	434,277	7,289,233	63.8	4,136,692	3,051,663	3,233,485	3,328,059
Wichita Valley	Nov.	271	139,108	7,312	155,020	22,856	6,204	58	43,618	1,631	74,360	48.0	80,660	70,018	48,731	64,902
	11 mos.	271	1,213,072	93,322	1,382,854	252,237	87,582	345	435,428	18,488	790,429	57.2	592,425	508,319	268,064	353,869
Columbus & Greenville	Nov.	167	158,262	20,511	188,976	28,674	19,528	4,165	58,864	10,604	121,835	64.5	67,141	55,241	48,249	33,518
	11 mos.	167	1,461,680	187,938	1,763,924	372,476	201,290	40,988	597,479	127,250	1,336,495	75.8	427,429	360,677	233,172	111,597
Conemaugh & Black Lick	Nov.	23	82,883	.....	155,532	13,128	26,569	858	90,130	3,730	134,415	86.4	21,117	20,117	16,845	32,444
	11 mos.	23	1,132,755	.....	2,020,469	177,804	314,824	8,268	1,063,422	37,754	1,602,072	79.3	418,397	387,397	382,063	254,204
Delaware & Hudson	Nov.	881	2,807,028	191,690	3,206,122	381,176	774,369	55,270	1,155,492	173,083	2,552,249	79.6	653,873	564,873	587,359	571,295
	11 mos.	881	32,149,956	3,039,992	37,898,629	4,534,760	8,717,664	625,660	13,584,244	1,807,091	29,403,681	77.6	8,494,948	7,513,945	7,525,226	5,824,660
Delaware, Lackawanna & Western	Nov.	998	4,993,113	839,722	6,611,631	651,252	1,133,612	129,203	2,629,974	172,003	4,705,054	71.2	1,906,577	1,325,968	1,301,583	1,851,134
	11 mos.	998	55,777,125	10,325,962	75,289,298	7,155,031	13,162,131	1,567,450	28,979,992	1,949,784	53,090,723	70.5	22,198,575	15,764,382	15,891,817	15,383,909
Denver & Rio Grande Western	Nov.	2,563	2,726,341	204,895	3,155,030	433,230	567,167	62,415	979,672	91,124	2,154,401	68.3	1,000,629	749,955	723,598	816,351
	11 mos.	2,557	26,208,356	3,225,496	32,061,923	5,198,365	5,950,518	687,386	9,309,132	1,004,296	22,544,875	70.3	9,517,048	7,318,327	7,938,020	6,286,512
Denver & Salt Lake	Nov.	232	377,396	14,384	409,599	41,432	63,271	1,915	55,496	11,087	171,421	41.9	238,178	224,172	230,839	179,945
	11 mos.	232	3,069,111	182,148	3,544,777	629,923	718,304	24,403	545,986	150,702	2,049,816	57.8	1,494,961	1,368,918	1,444,528	1,294,823
Detroit & Mackinac	Nov.	273	86,855	6,605	103,538	44,968	20,474	1,958	34,797	6,838	106,090	102.5	—2,552	—12,059	—8,199	11,667
	11 mos.	286	1,266,480	113,869	1,510,178	362,617	311,892	24,388	445,724	69,270	1,164,587	77.1	345,591	251,695	272,970	188,142
Detroit & Toledo Shore Line	Nov.	50	294,537	.....	300,145	37,559	32,970	49,662	84,863	25,673	230,727	76.8	69,418	49,318	—15,631	91,974
	11 mos.	50	4,473,975	.....	4,558,821	445,026	402,757	418,534	1,098,635	232,363	2,594,482	56.9	1,964,339	1,591,355	710,078	1,043,383
Detroit Terminal	Nov.	19	.....	.....	110,951	18,214	11,941	.....	73,485	4,576	108,216	97.5	2,735	—7,236	—7,013	30,416
	11 mos.	19	.....	.....	2,338,628	246,736	209,524	1	1,036,434	48,599	1,541,294	65.9	797,334	585,172	591,603	579,192
Detroit, Toledo & Ironton	Nov.	527	667,557	2,528	691,545	147,302	132,023	11,517	250,920	32,400	565,625	81.8	125,920	119,688	92,955	313,240
	11 mos.	497	12,885,905	34,064	13,204,971	1,728,550	1,783,163	130,795	3,198,540	350,695	7,164,790	54.3	6,040,181	5,390,968	4,556,267	2,265,857
Duluth & Iron Range	Nov.	269	247,392	3,425	291,007	68,719	115,348	899	118,687	22,063	325,298	111.8	—34,291	—70,342	—68,090	10,421
	11 mos.	269	6,226,476	48,845	7,178,713	1,099,827	1,222,787	15,641	1,619,139	240,535	4,196,813	58.5	2,981,900	2,440,765	2,453,583	1,993,422
Duluth, Missabe & Northern	Nov.	305	793,157	3,254	903,425	117,716	186,077	2,355	223,958	23,934	554,003	61.3	349,422	195,721	201,422	433,492
	11 mos.	306	18,062,127	40,801	20,522,469	1,621,544	2,026,702	31,970	3,221,544	259,347	7,160,709	34.9	13,361,760	11,316,531	11,303,067	8,784,408
Duluth, Winnipeg & Pacific	Nov.	178	166,258	12,718	192,963	35,436	47,441	4,590	68,255	8,079	165,621	85.8	27,342	18,045	20,629	29,038
	11 mos.	178	2,028,444	158,675	2,312,342	474,838	490,485	53,118	793,376	90,847	1,936,920	83.8	375,422	257,614	267,541	294,332
Elgin, Joliet & Eastern	Nov.	453	1,761,832	29	1,941,270	236,675	411,057	14,652	751,285	54,058	1,466,518	75.5	474,752	363,127	194,774	366,464
	11 mos.	453	22,439,035	249	24,667,135	2,388,091	3,920,742	167,403	8,444,546	584,783	15,493,039	62.8	9,174,096	7,719,481	5,537,895	4,278,164
Erie Railroad	Nov.	2,046	7,136,493	769,143	8,668,417	903,102	2,064,315	206,391	3,524,118	313,201	7,049,799	81.3	1,618,618	1,354,717	1,161,729	1,624,629
	11 mos.	2,046	86,687,692	9,513,454	105,304,552	12,489,737	24,280,174	2,043,016	39,144,756	3,379,131	81,837,526	77.7	23,467,026	18,682,725	18,000,437	16,817,169
Chicago & Erie	Nov.	269	1,154,453	53,502	1,329,383	116,274	110,684	32,928	405,020	46,770	708,516	53.3	620,867	561,805	202,167	165,343
	11 mos.	269	12,719,483	596,548	14,574,376	1,734,604	1,494,791	332,071	4,104,769	475,791	8,129,680	55.8	6,444,696	5,818,424	2,469,906	1,605,569
New Jersey & New York	Nov.	45	19,372	93,066	117,657	16,356	15,029	2,051	66,675	4,118	104,229	88.6	13,428	9,320	—24,178	—17,123
	11 mos.	45	294,823	1,056,246	1,415,562	205,129	232,493	20,576	754,047	41,524	1,253,722	88.6	161,840	116,623	—248,804	—222,935
N. Y., Susquehanna & Western	Nov.	131	321,562	38,963	401,482	47,590	54,462	6,421	181,282	13,329	303,074	75.5	98,408	67,360	42,241	71,509
	11 mos.	131	3,737,547	466,906	4,621,674	633,377	594,431	58,844	2,027,054	137,776	3,451,292	74.7	1,170,382	827,825	570,806	446,411

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Evansville, Indianap. & Terre Haute	Nov.	146	$142,179	$2,533	$150,356	$22,640	$18,734	$1,809	$55,950	$4,572	$103,705	69.0	$46,651	$42,248	$1,368	—$26,751
	11 mos.	146	1,645,428	35,949	1,763,346	290,575	217,617	21,040	619,790	54,037	1,202,768	68.2	560,578	504,986	146,062	—22,475
Florida East Coast	Nov.	853	536,912	188,239	867,307	269,807	208,448	28,678	281,397	44,963	842,710	97.2	24,597	—118,512	—165,425	—28,283
	11 mos.	853	6,815,518	3,736,033	12,169,888	1,955,937	2,001,222	314,452	3,464,687	519,370	8,465,786	69.6	3,704,102	2,109,464	1,403,556	1,245,492
Fort Smith & Western	Nov.	249	129,245	8,272	144,445	28,096	28,855	5,591	46,606	6,621	114,753	79.4	29,692	23,769	16,405	10,647
	11 mos	249	1,192,309	98,891	1,389,821	273,346	278,884	64,468	448,780	78,200	1,136,543	81.8	253,278	200,074	101,862	45,971
Galveston Wharf	Nov.	13	.....	.....	244,844	42,353	4,972	4,117	42,816	9,440	121,827	49.7	123,017	81,217	81,403	98,950
	11 mos.	13	.....	.....	2,137,429	475,673	55,899	48,093	379,348	72,367	1,231,277	57.6	906,152	606,952	608,942	708,965
Georgia R. R.	Nov.	328	342,733	48,202	427,751	46,780	84,026	22,272	182,475	22,485	358,454	83.8	69,297	59,194	75,621	82,965
	11 mos.	328	3,909,141	588,397	4,872,936	592,741	916,672	247,980	2,026,304	259,864	4,043,839	83.0	829,097	709,687	861,142	844,402
Georgia & Florida	Nov.	502	100,867	6,459	116,138	28,203	23,636	9,570	54,465	9,070	125,166	107.8	—9,028	—18,528	—18,377	29
	11 mos.	476	1,368,919	100,679	1,570,100	292,257	243,876	107,266	625,405	95,473	1,355,359	86.3	214,741	108,114	132,158	166,117
Grand Trunk Western	Nov.	345	975,339	148,856	1,252,808	170,213	342,740	39,466	537,407	62,595	1,168,284	93.3	84,524	—9,252	—7,349	212,966
	11 mos.	345	17,392,079	1,926,766	20,490,236	3,014,927	4,164,919	485,327	6,873,877	714,699	15,314,982	74.7	5,175,254	4,148,051	3,048,530	3,271,890
Atlantic & St. Lawrence	Nov.	166	112,604	19,358	150,560	39,000	44,109	5,702	90,000	9,000	189,513	125.8	—38,953	—51,613	—101,546	—16,84
	11 mos.	166	1,623,340	271,590	2,122,800	546,771	495,327	66,272	1,086,684	93,668	2,306,533	108.6	—183,733	—349,053	—911,363	—939,205
Chic., Det. & Canada Gr. Tr. Jct.	Nov.	59	252,224	2,202	293,002	15,362	8,571	5,383	102,302	3,752	135,365	46.2	157,637	146,375	115,085	187,500
	11 mos.	59	3,088,183	13,246	3,601,673	236,006	159,135	52,048	1,071,582	41,071	1,559,584	43.3	2,042,089	1,918,881	1,584,992	1,727,201
Detroit, Grand Haven & Mil.	Nov.	192	449,886	15,724	509,004	63,972	45,797	14,404	214,380	16,544	354,859	69.7	154,145	139,102	25,153	111,741
	11 mos.	192	7,448,470	253,521	8,282,209	813,432	671,057	153,802	3,074,829	198,846	4,876,943	58.9	3,405,266	3,251,812	1,964,389	1,816,924
Great Northern	Nov.	8,367	8,393,041	815,416	10,066,311	1,002,354	1,377,355	241,755	3,225,448	228,519	6,172,682	61.3	3,893,629	3,097,662	2,942,599	5,004,070
	11 mos.	8,389	95,740,103	10,287,974	118,525,537	17,686,125	18,741,317	2,873,989	35,302,209	2,532,928	78,311,750	66.1	40,213,787	31,836,243	30,507,388	30,347,522
Green Bay & Western	Nov.	234	164,869	2,436	171,390	42,956	22,984	7,413	49,836	2,936	126,106	73.6	45,284	35,247	29,117	23,115
	11 mos.	234	1,739,956	48,501	1,850,128	323,403	274,427	76,532	681,767	34,365	1,389,452	75.1	460,676	362,591	303,006	259,957
Gulf & Ship Island	Nov.	307	149,928	30,590	198,707	60,742	32,339	4,873	86,987	6,830	194,544	97.9	4,163	—29,518	—42,820	—25,411
	11 mos.	307	2,313,961	383,346	2,946,426	675,302	530,780	56,046	1,100,824	84,727	2,482,391	84.3	464,035	106,295	—60,189	—25,181
Gulf, Mobile & Northern	Nov.	733	550,369	29,820	607,818	77,854	90,800	34,406	213,148	29,253	445,750	73.3	162,068	122,694	80,289	132,167
	11 mos.	733	6,458,241	295,556	7,090,166	1,008,841	1,063,367	362,728	2,070,528	321,092	4,830,212	68.1	2,259,954	1,763,923	1,352,384	1,194,033
Hocking Valley	Nov.	348	1,517,784	44,318	1,744,484	210,385	330,257	17,920	476,184	48,365	1,080,641	61.9	663,843	561,779	452,185	515,679
	11 mos.	348	16,930,607	592,338	19,438,479	2,343,360	3,528,048	183,991	5,146,007	505,050	11,689,688	60.1	7,748,791	6,344,119	5,534,688	5,176,057
Illinois Central	Nov.	5,018	9,226,323	1,554,740	11,799,420	1,618,136	2,902,911	255,292	4,495,384	367,541	9,720,541	82.4	2,078,879	1,288,153	1,233,140	2,089,828
	11 mos.	5,028	111,712,919	18,766,545	141,463,173	17,770,660	33,437,698	2,872,801	49,714,452	3,993,749	108,855,812	76.9	32,607,361	22,691,876	22,266,796	23,331,400
Yazoo & Mississippi Valley	Nov.	1,705	2,047,800	313,601	2,533,413	382,651	420,151	40,390	905,998	67,569	1,821,766	71.9	711,647	552,978	459,877	568,416
	11 mos.	1,705	20,726,992	2,949,309	25,274,454	4,353,046	4,774,019	482,053	9,389,859	719,522	19,784,905	78.3	5,489,549	3,657,024	2,804,099	2,698,310
Illinois Central System	Nov.	6,724	11,286,956	1,872,882	14,350,208	2,000,787	3,326,083	295,682	5,413,900	435,246	11,557,982	80.5	2,792,226	1,841,915	1,693,801	2,662,055
	11 mos.	6,733	132,587,413	21,758,622	166,927,911	22,123,706	38,271,228	3,354,854	59,204,681	4,714,781	128,802,108	77.2	38,125,803	26,367,717	25,089,712	26,009,505
Illinois Terminal	Nov.	481	394,843	117,173	536,495	57,157	69,823	18,418	204,659	34,033	383,955	71.5	152,540	131,272	88,546	63,721
	11 mos.	474	4,895,846	1,392,236	6,577,112	925,768	940,849	206,305	2,189,376	401,072	4,651,683	70.3	1,925,429	1,690,486	1,239,475	965,300
Kansas City Southern	Nov.	784	1,241,427	76,065	1,492,789	193,248	273,880	62,338	442,980	87,399	1,062,726	71.2	430,063	352,335	295,187	394,827
	11 mos.	784	14,560,481	961,459	17,477,572	2,132,540	2,901,901	691,162	5,003,261	942,912	11,690,404	66.9	5,787,168	4,532,695	3,877,660	3,717,359
Texarkana & Ft. Smith	Nov.	81	183,661	6,659	215,204	29,533	22,915	6,967	56,409	10,601	129,312	60.1	85,892	76,558	46,414	109,638
	11 mos.	81	2,560,820	76,307	2,871,574	287,208	252,245	82,125	645,596	121,917	1,411,309	49.1	1,460,265	1,273,729	905,613	826,334
Kansas, Oklahoma & Gulf	Nov.	326	317,644	2,289	326,799	39,734	27,179	14,715	75,735	10,159	166,095	50.8	160,704	132,722	108,519	102,562
	11 mos.	326	3,303,930	28,270	3,406,541	409,797	316,606	163,835	742,195	119,139	1,726,933	50.7	1,679,608	1,443,478	1,187,381	832,060
Lake Superior & Ishpeming	Nov.	160	152,587	622	184,008	23,795	26,068	448	49,380	6,220	105,911	57.6	78,097	65,230	64,301	67,853
	11 mos.	160	2,644,384	10,697	3,077,120	428,230	303,047	5,743	617,391	79,583	1,433,804	46.6	1,643,316	1,336,933	1,298,735	805,309
Lake Terminal	Nov.	12	.....	.....	91,351	11,312	13,039	.....	48,527	1,837	74,715	81.8	16,636	11,162	6,775	579
	11 mos.	12	.....	.....	1,153,377	147,653	160,376	.....	575,010	23,462	906,501	78.6	246,876	172,677	188,368	47,486
Lehigh & Hudson River	Nov.	96	209,471	897	220,582	29,268	30,924	2,584	68,054	9,055	139,885	63.4	80,697	69,725	52,391	61,583
	11 mos.	96	2,293,413	13,368	2,431,351	317,530	362,172	29,063	815,489	108,017	1,632,271	67.1	799,080	636,086	439,271	489,051
Lehigh & New England	Nov.	216	401,449	773	408,322	48,244	95,347	5,061	148,125	15,835	312,612	76.6	95,710	83,529	71,949	133,766
	11 mos.	216	4,595,937	10,599	4,682,418	565,322	1,027,128	65,020	1,619,814	183,237	3,459,419	73.9	1,222,999	1,058,910	999,702	1,114,605
Lehigh Valley	Nov.	1,361	4,331,861	441,200	5,244,294	561,741	1,190,579	141,345	2,327,111	140,875	4,392,031	83.7	852,263	639,014	491,450	1,367,993
	11 mos.	1,361	54,769,295	5,933,825	66,146,377	5,701,608	13,859,461	1,582,201	26,065,977	1,632,779	49,194,382	74.4	16,951,995	13,394,907	11,944,989	11,602,082
Louisiana & Arkansas	Nov.	636	603,335	24,225	655,380	85,487	116,964	22,337	202,202	25,108	451,071	68.8	204,309	152,917	96,919	106,407
	11 mos.	636	6,740,636	249,226	7,285,966	1,190,982	1,105,382	249,240	2,114,540	256,596	4,887,652	67.1	2,398,314	1,796,143	1,257,960	940,771
Louisiana Ry. & Nav. Co. of Texas	Nov.	206	87,908	2,947	93,900	26,380	18,140	2,644	42,651	6,023	95,832	102.1	—1,932	—5,932	—22,457	9,901
	11 mos.	206	917,403	30,374	995,323	274,209	155,514	34,205	423,957	61,062	947,142	95.2	48,181	—18,632	—162,832	—148,080
Louisville & Nashville	Nov.	5,249	8,561,310	1,086,619	10,375,552	1,620,687	2,564,283	270,112	3,623,889	356,157	8,483,586	81.8	1,891,966	1,383,504	1,446,588	1,761,332
	11 mos.	5,249	100,146,970	14,274,947	122,622,375	19,936,104	28,163,211	2,702,507	42,225,765	4,184,467	97,733,362	79.7	24,889,013	17,909,497	18,698,124	20,597,321

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Maine Central	Nov.	1,121	$1,273,913	$188,189	$1,617,973	$210,167	$279,739	$14,098	$615,297	$48,728	$1,167,780	72.2	$450,193	$346,836	$321,304	$197,406
	11 mos.	1,122	13,551,222	2,845,023	18,664,403	2,653,016	3,657,514	198,199	6,742,451	569,178	13,842,832	74.2	4,821,571	3,781,478	3,388,068	2,506,698
Midland Valley	Nov.	364	276,630	11,088	297,714	55,010	33,028	5,326	76,080	10,391	181,154	60.8	116,560	98,521	74,962	80,622
	11 mos.	364	3,061,418	127,278	3,308,893	595,994	335,250	66,126	825,236	125,034	1,920,853	58.1	1,388,040	1,214,495	967,211	1,017,591
Minneapolis & St. Louis	Nov.	1,627	975,052	56,688	1,105,482	119,286	227,331	35,763	510,134	45,124	938,704	84.9	166,778	93,307	15,700	83,689
	11 mos.	1,627	11,952,724	734,774	13,600,787	1,776,970	2,270,598	396,889	5,921,742	508,865	10,873,402	79.9	2,727,385	2,000,707	1,833,982	518,099
Minn., St. Paul & S. S. Marie	Nov.	4,380	3,146,893	285,408	3,730,074	481,405	691,379	79,852	1,384,137	123,525	2,750,425	73.7	979,649	765,106	538,317	1,005,934
	11 mos.	4,380	37,072,514	4,285,053	45,340,020	6,050,485	8,175,305	896,425	15,936,693	1,349,057	32,636,171	72.0	12,703,849	10,000,225	8,261,552	8,447,235
Duluth, South Shore & Atlantic	Nov.	573	264,895	38,450	335,995	58,312	68,763	6,946	147,299	10,226	294,287	87.6	41,708	10,366	3,861	31,595
	11 mos.	573	3,642,657	568,836	4,629,110	820,539	770,506	84,153	1,886,193	120,016	3,706,286	80.1	922,824	577,480	406,792	320,433
Spokane International	Nov.	165	70,191	7,505	91,246	15,724	8,985	3,955	29,376	7,554	66,603	73.0	24,643	20,538	13,464	19,134
	11 mos.	165	900,389	95,280	1,163,359	202,741	103,841	40,551	366,986	75,211	800,903	68.8	362,456	304,894	231,109	220,292
Mississippi Central	Nov.	150	113,655	6,041	124,956	23,418	21,656	10,000	35,102	9,044	99,220	79.4	25,736	19,869	20,810	31,225
	11 mos.	156	1,391,905	71,599	1,525,237	211,963	286,705	106,047	395,107	91,298	1,090,774	71.5	434,463	322,102	347,530	357,789
Missouri-Illinois	Nov.	202	182,178	1,719	190,110	40,105	42,578	3,902	51,873	5,829	144,236	75.9	45,874	39,430	35,531	36,561
	11 mos.	202	2,084,907	18,478	2,166,055	292,238	369,411	38,723	586,258	89,953	1,374,161	63.4	791,894	659,327	541,463	422,613
Missouri & North Arkansas	Nov.	364	142,473	8,203	159,213	24,730	23,155	10,303	56,918	8,542	124,195	78.0	35,018	32,618	17,156	14,584
	11 mos.	364	1,564,754	109,678	1,800,693	416,248	296,583	108,062	662,015	96,265	1,581,780	87.8	218,913	190,675	36,115	—20,835
Missouri-Kansas-Texas Lines	Nov.	3,188	3,664,890	469,441	4,528,549	527,070	687,093	128,920	1,324,705	170,839	2,853,953	63.0	1,674,596	1,497,564	1,260,611	1,210,013
	11 mos.	3,188	41,277,486	5,693,385	51,728,291	7,367,801	9,289,294	1,388,639	14,855,960	1,890,119	34,933,184	67.5	16,795,107	13,698,604	11,258,369	11,105,317
Missouri Pacific	Nov.	7,452	9,470,595	962,070	11,359,343	2,233,233	1,553,432	350,643	3,967,532	392,158	8,450,390	74.4	2,908,953	2,476,037	2,004,063	1,865,089
	11 mos.	7,458	106,227,841	11,961,971	129,695,178	22,778,331	21,040,546	3,549,636	43,000,136	4,308,398	94,877,976	73.2	34,817,202	28,928,964	23,177,878	19,788,492
Gulf Coast Lines	Nov.	1,026	933,588	115,531	1,135,489	153,196	184,984	43,080	358,511	62,090	804,377	70.8	331,112	269,435	208,548	219,229
	11 mos.	1,026	11,667,593	1,395,178	13,981,459	2,265,205	2,398,382	506,557	3,971,858	674,595	9,766,959	69.9	4,214,500	3,602,928	2,862,928	2,687,787
International-Great Northern	Nov.	1,159	1,013,341	169,954	1,364,286	235,462	278,478	44,383	572,390	69,039	1,188,288	87.10	175,998	125,007	46,303	243,056
	11 mos.	1,159	13,157,210	1,872,201	16,859,116	2,637,581	2,759,658	448,683	6,518,492	786,388	13,144,843	78.01	3,714,273	3,242,095	2,126,911	2,499,160
San Antonio, Uvalde & Gulf	Nov.	318	81,852	12,815	107,789	41,424	17,489	7,170	45,678	8,555	119,046	110.4	—11,257	—16,042	—42,162	—16,526
	11 mos.	318	1,434,082	181,840	1,769,342	419,271	264,855	81,740	534,443	94,962	1,386,572	78.4	382,770	334,720	18,978	197,707
Mobile & Ohio	Nov.	1,159	1,111,116	80,975	1,269,676	194,198	263,296	59,374	489,704	56,868	1,061,264	83.6	208,412	146,884	96,044	289,759
	11 mos.	1,159	14,261,460	952,621	16,168,904	2,409,114	3,019,793	621,983	5,682,660	556,900	12,263,538	75.8	3,905,366	2,952,999	2,436,402	2,395,807
Monongahela	Nov.	170	617,423	7,963	630,978	80,000	75,000	1,260	161,039	11,419	327,956	52.0	303,022	283,694	173,917	190,483
	11 mos.	171	6,690,491	107,795	6,861,780	880,000	825,000	12,978	1,703,029	123,186	3,536,360	51.5	3,325,420	3,057,232	1,913,270	1,790,262
Monongahela Connecting	Nov.	6	.....	.....	153,810	21,238	32,092	300	75,247	2,652	131,529	85.5	22,281	15,714	7,111	9,755
	11 mos.	6	.....	.....	2,410,576	264,450	385,571	3,301	1,024,940	40,807	1,719,069	71.3	691,507	568,414	477,456	371,798
Montour	Nov.	56	194,006	8	194,551	31,233	55,524	1,426	55,554	7,750	151,487	77.9	43,064	40,592	49,443	56,104
	11 mos.	56	2,245,963	10	2,255,013	311,304	551,902	14,784	522,507	80,312	1,475,832	65.4	779,181	759,179	865,698	623,241
Nashville, Chatt. & St. Louis	Nov.	1,222	1,360,341	197,011	1,732,671	212,488	378,845	77,105	633,819	74,926	1,383,034	79.8	349,637	257,526	270,300	442,426
	11 mos.	1,236	16,998,599	2,675,711	21,591,279	2,538,148	4,285,843	874,357	7,370,715	881,601	16,022,486	74.2	5,568,793	4,561,869	4,664,048	4,153,449
Nevada Northern	Nov.	165	80,387	3,734	97,456	12,496	5,311	989	16,736	4,744	40,449	41.5	57,007	44,162	43,108	56,209
	11 mos.	165	1,018,044	64,444	1,231,631	136,247	70,937	10,560	186,603	55,186	461,481	37.5	770,150	609,162	591,337	425,796
Newburgh & South Shore	Nov.	6	.....	.....	160,080	19,472	30,310	.....	63,253	5,950	118,985	74.3	41,095	23,573	24,466	45,714
	11 mos.	6	.....	.....	1,867,887	174,017	351,118	.....	746,222	67,693	1,339,050	71.7	528,837	345,625	394,932	347,027
New Orleans Great Northern	Nov.	276	238,748	14,905	262,841	35,409	65,145	13,979	82,008	11,314	207,680	79.0	55,161	35,932	7,900	58,889
	11 mos.	276	2,738,478	189,036	3,037,393	466,563	517,684	152,770	885,255	130,258	2,151,822	70.8	885,571	682,871	404,652	528,142
New Orleans Terminal	Nov.	20	1,605	.....	147,152	16,328	8,569	.....	56,029	1,582	82,508	56.1	64,644	53,636	44,926	88,071
	11 mos.	20	24,454	.....	1,658,859	203,149	102,324	.....	651,126	18,778	975,369	58.8	683,490	566,499	438,520	468,466
New York Central	Nov.	6,914	19,015,496	7,055,625	30,937,826	3,878,725	7,655,029	503,624	11,402,419	973,831	24,871,124	80.4	6,066,702	4,122,745	4,044,332	4,405,444
	11 mos.	6,914	225,148,675	88,523,955	366,410,487	49,035,460	81,191,505	5,329,128	125,393,026	10,179,104	276,863,214	75.6	89,547,273	63,304,848	61,486,638	57,881,816
Cincinnati Northern	Nov.	244	300,531	2,141	311,276	22,608	55,702	5,885	102,195	10,080	196,470	63.1	114,806	88,231	86,596	65,238
	11 mos.	244	3,362,306	33,801	3,491,100	385,907	703,954	65,745	1,129,397	111,601	2,396,008	68.6	1,095,092	822,046	744,680	577,236
Cleve., Cinn., Chicago & St. Louis	Nov.	2,397	5,394,145	981,569	7,058,122	852,104	1,748,077	159,171	2,735,357	232,350	5,800,716	82.2	1,257,406	865,070	889,195	1,401,350
	11 mos.	2,397	64,525,484	12,749,877	84,973,258	9,535,002	18,759,641	1,743,189	30,556,326	2,629,373	64,148,525	75.5	20,824,733	15,771,371	14,854,960	13,180,532
Indiana Harbor Belt	Nov.	117	.....	.....	1,008,401	63,000	102,093	4,674	410,426	26,640	618,655	61.4	389,746	325,675	229,369	332,016
	11 mos.	118	.....	.....	11,983,886	1,067,000	1,229,365	55,655	4,628,777	300,918	7,417,403	61.9	4,566,483	4,794,253	3,212,499	3,108,308
Michigan Central	Nov.	1,858	4,423,992	1,430,389	6,683,736	748,276	1,603,419	148,078	2,322,354	179,505	5,115,532	76.5	1,568,204	1,137,170	1,055,079	1,720,232
	11 mos.	1,858	60,381,753	18,132,437	88,100,621	9,383,247	18,477,232	1,518,984	27,502,724	1,913,048	59,996,497	68.1	28,104,124	22,113,040	20,726,986	21,226,661
Pittsburgh & Lake Erie	Nov.	231	2,324,261	177,311	2,593,469	357,637	967,867	28,999	925,095	78,402	2,368,152	91.3	225,317	70,617	477,835	725,246
	11 mos.	231	28,523,245	2,039,891	31,830,816	3,793,449	11,100,417	322,500	10,141,912	871,381	26,342,014	82.8	5,488,802	3,507,257	7,459,474	7,042,312
New York, Chicago & St. Louis	Nov.	1,690	3,901,958	142,664	4,261,337	614,065	782,218	137,218	1,629,974	140,675	3,277,373	76.9	983,964	848,864	591,203	870,869
	11 mos.	1,690	48,798,956	1,794,804	52,581,798	6,573,175	9,966,365	1,241,484	17,840,181	1,454,539	36,870,377	70.1	15,711,421	12,868,055	10,193,063	8,596,360

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
N. Y., New Haven & Hartford	Nov.	2,133	$6,427,682	$3,896,223	$12,676,410	$1,925,778	$1,822,016	$102,392	$3,642,773	$323,144	$7,995,760	63.1	$4,680,650	$3,879,040	$3,266,909	$3,418,062
	11 mos.	2,131	72,380,171	42,673,127	130,779,720	18,724,191	21,401,029	1,173,084	39,608,451	3,655,001	86,477,831	66.1	44,301,889	36,688,721	30,657,876	26,435,408
New York Connecting	Nov.	20	246,090	.....	278,120	25,495	36,705	.....	41,569	1,445	105,214	37.8	172,906	137,206	118,251	122,369
	11 mos.	20	2,421,734	.....	2,803,028	420,808	133,711	.....	414,722	19,310	988,551	35.3	1,814,477	1,411,377	1,147,164	980,823
New York, Ontario & Western	Nov.	568	606,122	34,933	784,828	148,465	202,964	18,039	404,421	34,007	813,404	103.6	—28,576	—58,583	—114,980	43,445
	11 mos.	568	7,689,310	1,842,716	11,332,246	1,661,365	2,178,564	216,249	4,912,253	377,783	9,380,976	82.8	1,951,270	1,485,907	865,963	957,493
Norfolk & Western	Nov.	2,239	9,334,897	368,861	10,102,536	1,421,417	1,601,734	121,674	1,977,166	243,754	5,379,448	53.2	4,723,088	3,872,641	4,173,983	3,865,655
	11 mos.	2,240	99,713,972	4,631,864	108,076,685	13,391,509	19,214,201	1,313,156	29,938,834	2,665,572	60,627,423	56.1	47,449,262	37,940,703	40,666,340	30,919,421
Norfolk Southern	Nov.	931	555,297	24,755	627,610	87,955	94,520	29,650	223,940	26,010	460,552	73.4	167,058	114,767	103,873	112,763
	11 mos.	931	6,625,645	365,927	7,559,466	1,059,045	1,082,740	304,122	2,836,794	314,125	5,571,926	73.7	1,987,540	1,421,226	1,238,920	1,472,294
Northern Pacific	Nov.	6,792	6,439,103	650,112	7,895,406	638,642	1,574,221	195,016	2,640,312	251,402	5,407,635	68.5	2,487,771	1,627,406	2,050,033	3,230,235
	11 mos.	6,792	71,810,353	8,989,099	89,814,321	11,566,508	17,110,016	2,513,649	29,755,290	2,849,319	65,105,120	72.5	24,709,201	16,155,094	20,383,407	23,200,129
Northwestern Pacific	Nov.	477	282,753	115,614	461,109	138,338	81,360	7,858	222,420	17,718	467,393	101.4	—6,284	—42,861	—44,178	—108,912
	11 mos.	477	3,650,589	1,574,531	5,792,556	1,159,212	958,996	84,301	2,547,101	196,972	4,940,273	85.3	852,283	439,756	390,485	201,869
Pennsylvania R. R.	Nov.	10,498	38,227,704	9,663,502	53,768,073	7,521,252	11,040,202	996,127	19,946,696	1,715,479	41,822,625	77.8	11,945,448	8,474,546	7,061,480	11,244,733
	11 mos.	10,498	450,254,927	118,329,956	633,140,255	80,852,565	120,950,798	10,063,187	215,618,925	17,992,055	452,564,662	71.5	180,575,593	141,226,477	126,820,793	109,256,483
Long Island	Nov.	404	848,269	2,035,847	3,084,453	498,502	474,696	16,281	1,403,904	65,815	2,460,962	79.8	623,491	436,511	240,568	528,431
	11 mos.	404	10,410,348	25,688,113	38,215,910	4,711,799	5,202,298	233,621	14,462,327	703,466	25,323,733	66.3	12,892,177	10,029,170	8,227,214	7,119,845
West Jersey & Seashore	Nov.	370	439,661	219,726	695,347	160,227	87,240	4,307	333,130	15,628	603,291	86.8	92,056	85,006	110,393	70,574
	11 mos.	370	4,835,529	4,481,630	9,798,221	1,348,267	1,240,730	62,650	3,867,865	186,768	6,729,652	68.7	3,068,572	2,031,523	1,758,041	888,147
Peoria & Pekin Union	Nov.	19	16,547	1,659	146,190	25,779	14,344	5,065	66,719	7,443	119,350	81.6	26,840	11,840	29,295	14,282
	11 mos.	19	215,711	17,242	1,675,651	213,698	147,067	60,521	711,558	91,671	1,224,515	73.1	451,136	279,032	466,005	549,745
Pere Marquette	Nov.	2,241	3,035,041	174,739	3,485,468	473,682	1,055,206	71,890	1,358,887	131,655	3,092,669	88.7	392,799	219,362	43,416	1,023,108
	11 mos.	2,241	39,420,440	2,731,542	45,239,796	5,239,657	9,404,153	739,040	14,648,436	1,372,975	31,349,991	69.3	13,889,805	11,086,536	9,402,584	9,988,461
Pittsburgh & Shawmut	Nov.	102	107,771	3,363	113,334	14,317	32,477	1,905	34,510	6,742	89,951	79.4	23,383	22,017	29,498	31,101
	11 mos.	102	1,323,374	35,176	1,384,506	217,351	361,615	19,434	408,626	87,180	1,094,206	79.0	290,300	275,531	328,641	477,087
Pittsburgh & West Virginia	Nov.	92	297,236	3,715	332,524	48,189	84,237	19,403	66,590	27,201	255,299	76.8	77,225	67,845	143,610	191,960
	11 mos.	92	4,061,070	44,644	4,456,734	422,449	914,791	194,544	792,095	272,103	2,710,438	60.8	1,746,296	1,290,414	2,182,679	2,077,978
Pittsburgh, Shawmut & Northern	Nov.	198	149,518	1,151	154,592	26,056	25,134	1,652	50,982	6,923	110,747	71.6	43,845	40,853	30,495	36,087
	11 mos.	198	1,594,978	13,275	1,656,400	358,819	299,767	18,252	522,274	69,838	1,278,950	77.2	377,450	344,477	251,755	286,896
Quincy, Omaha & Kansas City	Nov.	249	49,286	7,270	63,206	51,925	9,115	767	26,131	2,835	90,072	142.5	—26,866	—31,861	—35,066	—13,606
	11 mos.	249	550,106	95,985	723,109	301,147	96,779	8,580	305,950	29,559	740,140	102.4	—17,031	—70,625	—100,433	—193,231
Reading	Nov.	1,459	7,043,153	557,386	8,054,271	1,079,153	1,880,921	79,871	2,989,736	215,917	6,267,202	77.8	1,787,069	1,460,484	1,592,032	2,407,992
	11 mos.	1,459	76,546,542	6,431,990	89,164,751	12,989,353	20,193,057	1,026,761	32,608,691	2,420,659	69,546,946	78.0	19,617,805	15,445,942	15,828,448	15,934,074
Atlantic City	Nov.	163	137,992	71,840	232,471	67,554	21,380	3,448	180,690	3,722	276,953	119.1	—44,482	—85,082	—104,615	—122,525
	11 mos.	163	1,475,518	2,005,624	3,765,605	727,604	249,707	47,961	2,037,746	51,351	3,116,097	82.8	649,508	207,792	—63,490	—595,443
Richmond, Fredericksburg & Potomac	Nov.	117	427,151	239,930	823,337	93,172	160,642	9,808	303,937	35,197	619,607	75.3	203,730	151,635	112,064	178,364
	11 mos.	117	5,544,473	3,323,943	10,785,069	1,352,025	1,827,483	109,193	3,584,728	402,729	7,494,664	69.5	3,290,405	2,648,360	2,135,580	1,682,255
Rutland	Nov.	413	278,123	62,759	483,631	93,933	96,361	9,821	190,375	17,051	407,539	84.3	76,092	57,336	64,846	46,168
	11 mos.	413	3,295,792	941,835	5,810,219	1,069,515	1,084,364	119,628	2,138,037	185,325	4,614,120	79.4	1,196,099	879,363	963,879	889,341
St. Louis-San Francisco	Nov.	5,304	5,591,934	791,308	6,952,431	888,260	1,355,240	131,914	2,413,637	238,784	5,009,609	72.1	1,942,822	1,608,147	1,592,800	1,698,229
	11 mos.	5,304	62,351,286	9,703,520	78,820,139	10,606,533	15,443,587	1,457,745	25,414,181	2,585,489	54,901,841	69.7	23,918,298	19,177,175	19,597,541	18,804,613
Ft. Worth & Rio Grande	Nov.	233	93,601	6,713	111,898	34,286	18,838	3,188	46,362	5,062	107,736	96.3	4,162	478	—9,802	74,190
	11 mos.	233	925,221	77,748	1,152,451	375,468	199,512	37,520	486,244	57,731	1,155,113	100.2	—2,662	—50,907	—149,983	—30,848
St. Louis-San Francisco & Texas	Nov.	154	183,407	11,848	202,963	38,075	26,723	5,362	57,455	7,511	135,007	66.5	67,956	64,032	33,887	48,411
	11 mos.	154	1,623,454	122,632	1,834,680	331,480	288,869	60,356	627,106	85,972	1,392,262	75.9	442,418	409,376	107,599	55,600
St. Louis Southwestern	Nov.	950	1,321,612	59,830	1,468,836	202,708	228,410	71,572	396,231	61,067	967,704	65.9	501,132	445,142	335,672	355,892
	11 mos.	942	15,373,172	686,079	16,960,720	1,944,250	2,458,152	782,893	4,276,255	721,361	10,284,643	60.6	6,676,072	5,886,270	4,519,490	3,887,119
St. Louis Southwestern of Texas	Nov.	807	491,593	38,049	592,872	226,719	147,108	28,664	272,085	35,182	720,606	121.5	—127,734	—155,379	—120,352	—40,041
	11 mos.	807	5,983,798	406,450	7,151,498	2,945,176	1,436,540	327,219	3,085,067	387,320	8,283,461	115.8	—1,131,963	—1,438,569	—1,147,213	—148,910
San Diego & Arizona	Nov.	156	75,253	10,336	93,078	17,761	22,340	3,297	23,210	9,081	76,868	82.6	16,210	10,865	11,096	19,533
	11 mos.	156	953,324	180,255	1,182,396	210,935	199,351	44,100	301,594	95,781	866,714	73.3	315,682	253,513	255,556	207,420
Seaboard Air Line	Nov.	4,490	3,501,924	489,072	4,461,579	582,597	847,039	203,507	1,559,859	181,123	3,372,656	75.6	1,088,923	813,298	795,334	899,462
	11 mos.	4,490	41,253,163	6,467,514	53,392,215	6,714,691	9,400,905	2,197,082	18,537,192	1,954,112	39,267,714	73.5	14,124,501	10,664,787	9,896,403	9,047,901
Southern Ry.	Nov.	6,730	8,944,667	1,528,792	11,450,003	1,703,706	2,540,473	224,004	3,821,916	381,110	8,737,723	76.3	2,712,280	2,111,360	1,954,339	3,160,529
	11 mos.	6,730	100,091,209	19,989,574	132,297,696	19,807,340	24,183,331	2,667,269	42,968,705	4,189,389	94,612,609	71.5	37,685,087	28,918,203	27,957,905	27,879,967
Alabama Great Southern	Nov.	314	577,963	115,083	747,562	145,986	175,438	22,742	241,834	27,171	619,621	82.9	127,941	87,804	91,669	296,119
	11 mos.	314	7,372,264	1,454,924	9,598,707	1,646,526	1,919,606	236,117	2,689,092	273,264	6,838,509	71.2	2,760,198	2,026,579	2,259,202	2,218,272
Cinn., New Orleans & Tex. Pacific	Nov.	338	1,305,170	186,475	1,587,152	100,764	529,995	44,754	596,402	63,336	1,344,991	84.7	242,161	173,307	156,951	357,399
	11 mos.	338	16,900,586	2,701,075	20,963,266	4,500,894	4,709,784	484,899	5,776,731	601,132	16,192,662	77.2	4,770,604	3,741,643	3,590,406	4,577,768

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Georgia Southern & Florida	Nov.	397	$209,346	$58,161	$294,954	$66,761	$84,229	$1,722	$105,482	$3,257	$265,537	90.0	$29,417	$4,940	$15,844	$128,622
	11 mos.	397	2,546,985	944,583	3,903,354	808,329	919,746	38,248	1,435,829	50,278	3,312,156	84.9	591,198	332,645	400,907	284,836
New Orleans & Northeastern	Nov.	204	306,157	55,052	392,799	62,943	78,560	12,074	131,901	15,139	304,341	77.5	88,458	47,939	10,997	59,144
	11 mos.	204	4,077,133	686,535	5,193,933	694,265	907,286	128,083	1,468,712	165,489	3,406,404	65.6	1,787,529	1,253,405	824,218	746,080
Northern Alabama	Nov.	110	97,568	5,398	105,839	22,622	3,107	1,668	32,029	2,871	62,297	58.9	43,542	40,560	19,704	49,083
	11 mos.	110	1,036,922	58,658	1,140,286	248,055	37,993	22,321	336,526	30,636	675,581	59.2	464,705	392,244	182,966	65,336
Southern Pacific	Nov.	9,130	12,935,382	2,761,635	17,404,682	2,213,246	3,107,542	320,695	6,008,275	767,298	12,714,152	73.1	4,690,530	3,299,059	2,768,920	2,992,724
	11 mos.	8,946	153,623,869	35,940,176	209,516,029	25,455,053	33,317,694	4,639,482	66,723,793	7,371,465	141,266,453	67.4	68,249,576	50,987,850	45,632,859	41,992,127
So. Pacific Steamship Lines	Nov.	....	799,273	39,306	895,740	21,122	382,531	20,102	551,338	38,388	1,013,481	113.1	—117,741	—119,052	—119,184	50,451
	11 mos.	....	8,589,241	608,664	10,262,479	239,342	3,345,195	225,651	6,293,183	384,319	10,487,690	102.2	—225,211	—242,296	—216,896	767,070
Texas & New Orleans	Nov.	4,729	4,725,586	766,340	6,060,075	824,810	1,159,771	176,323	1,926,786	253,133	4,350,246	71.8	1,709,829	1,347,476	1,078,959	1,059,156
	11 mos.	4,729	53,632,541	9,426,215	68,753,296	10,430,783	13,197,729	1,957,951	21,707,369	2,860,839	50,263,804	73.1	18,489,492	14,451,678	11,221,555	8,301,157
Spokane, Portland & Seattle	Nov.	554	570,180	71,660	713,269	69,710	101,261	11,229	224,796	25,744	439,520	61.6	273,749	180,654	167,145	199,976
	11 mos.	554	6,949,532	974,561	8,744,675	1,224,147	1,148,534	137,693	2,566,673	265,953	5,408,364	61.8	3,336,311	2,378,392	2,198,995	2,148,080
Tennessee Central	Nov.	296	234,641	12,994	263,764	49,058	47,371	8,787	95,139	14,517	210,817	79.9	52,947	48,167	30,977	29,699
	11 mos.	296	2,745,759	171,797	3,109,037	546,101	477,459	95,523	1,076,666	147,754	2,318,966	74.6	790,071	697,750	489,359	363,255
Terminal R. R. Assn. of St. Louis	Nov.	55	.....	.....	904,150	155,391	82,992	2,761	440,821	28,997	713,265	78.9	190,885	91,020	177,347	230,523
	11 mos.	55	.....	.....	11,687,619	1,819,495	956,693	29,800	5,068,775	300,535	8,210,470	70.2	3,477,149	2,333,206	3,307,969	3,492,302
Texas & Pacific	Nov.	1,954	2,969,213	411,488	3,663,625	594,047	626,393	73,039	1,163,546	125,517	2,569,157	70.1	1,094,468	946,849	741,626	1,012,825
	11 mos.	1,998	34,177,650	4,943,070	42,205,549	6,747,846	7,153,352	991,084	12,960,116	1,365,990	29,174,305	69.1	13,031,244	10,963,597	8,322,399	9,560,250
Texas Mexican	Nov.	162	76,501	4,284	92,381	16,141	18,230	3,736	39,592	7,674	83,930	90.9	8,451	3,390	—4,861	—4,935
	11 mos.	162	1,095,145	39,610	1,266,605	215,563	211,854	45,391	470,282	86,443	1,018,506	80.4	248,099	192,606	102,019	142,857
Toledo, Peoria & Western	Nov.	239	129,903	146	134,720	19,695	14,063	12,544	74,692	9,144	130,138	96.6	4,582	3,982	—9,241	35,635
	11 mos.	239	2,068,982	6,292	2,144,090	297,763	260,531	133,323	726,625	99,669	1,517,911	70.8	626,179	547,471	416,155	282,980
Toledo Terminal	Nov.	28	.....	.....	116,918	8,020	20,864	540	51,660	4,895	91,897	78.6	25,021	8,350	29,588	58,906
	11 mos.	28	.....	.....	1,493,699	118,239	119,155	6,428	624,343	59,616	1,004,283	67.2	489,416	311,249	556,215	626,720
Trinity & Brazos Valley	Nov.	367	258,429	6,310	288,031	93,335	36,079	6,012	106,534	12,729	250,329	86.9	37,702	29,197	—7,868	81,664
	11 mos.	367	2,389,957	73,751	2,586,779	691,362	401,166	62,638	928,191	134,377	2,199,138	85.0	387,641	301,221	—85,352	143,464
Ulster & Delaware	Nov.	128	36,965	1,434	70,106	13,380	12,609	1,262	36,574	3,968	67,793	96.7	2,313	—2,187	—4,992	—4,812
	11 mos.	128	403,165	218,259	1,037,460	176,856	169,883	15,164	486,023	45,166	893,092	86.1	144,368	79,664	42,243	77,473
Union R. R. of Penna.	Nov.	45	.....	.....	783,476	Cr. 155,879	161,912	138	353,579	14,198	373,664	47.7	409,812	398,312	449,482	226,079
	11 mos.	45	.....	.....	10,411,834	789,406	2,014,811	1,905	3,976,855	158,174	6,938,923	66.6	3,472,911	3,082,984	3,886,847	2,966,157
Union Pacific	Nov.	3,765	7,846,633	1,034,827	9,800,589	810,592	1,994,973	186,810	2,918,022	349,552	6,417,270	65.5	3,383,319	2,794,206	2,350,821	3,103,543
	11 mos.	3,765	89,243,372	13,820,870	112,815,879	12,962,038	22,076,289	2,083,255	30,276,377	3,785,017	73,335,822	65.0	39,480,057	31,366,535	27,881,786	29,015,864
Oregon Short Line	Nov.	2,538	2,958,327	238,937	3,488,951	326,639	477,545	53,680	964,723	131,724	2,029,063	58.2	1,459,888	1,072,949	942,721	1,002,416
	11 mos.	2,538	30,210,969	3,577,680	36,658,603	5,390,513	5,145,400	626,703	10,255,472	1,452,432	23,692,122	64.6	12,966,481	9,274,656	8,165,555	7,755,514
Oregon-Wash. R. R. & Nav.	Nov.	2,364	1,909,489	175,053	2,330,226	248,095	328,026	72,900	876,273	131,923	1,697,013	72.8	633,213	432,038	295,156	248,966
	11 mos.	2,365	21,698,614	2,703,409	26,934,583	4,519,242	4,025,387	863,982	9,827,593	1,474,069	21,014,327	78.0	5,920,256	3,718,875	2,167,708	1,899,813
Los Angeles & Salt Lake	Nov.	1,210	1,682,394	263,659	2,222,375	285,090	330,037	86,294	685,402	90,309	1,549,360	69.7	673,015	479,786	358,725	184,162
	11 mos.	1,209	18,792,783	4,267,842	25,457,087	3,822,694	4,049,034	914,020	7,419,861	954,454	18,115,636	71.2	7,341,451	5,584,497	4,281,903	1,890,178
St. Joseph & Grand Island	Nov.	258	307,620	9,192	326,804	45,149	39,876	3,243	105,633	16,624	210,525	64.4	116,279	98,294	73,096	73,992
	11 mos.	258	3,373,640	115,732	3,682,189	559,728	471,233	36,548	1,205,485	176,137	2,449,131	66.5	1,233,058	1,001,921	730,823	705,660
Utah	Nov.	111	249,280	.....	249,550	30,403	45,116	359	49,791	5,662	131,331	52.6	118,219	100,252	88,354	63,219
	11 mos.	111	1,872,884	.....	1,877,007	265,274	409,393	4,087	398,339	57,632	1,134,725	60.5	742,282	601,357	532,435	258,602
Virginian	Nov.	545	1,650,442	23,384	1,763,487	129,740	334,062	13,225	331,211	30,565	837,128	47.5	926,359	746,110	825,545	758,176
	11 mos.	545	17,005,004	302,486	18,232,641	1,843,098	3,274,343	154,940	3,578,582	356,604	9,184,313	50.4	9,048,328	7,162,048	8,006,055	6,426,607
Wabash	Nov.	2,523	4,623,170	495,018	5,586,461	687,693	1,023,451	207,460	2,294,011	242,649	4,401,972	78.8	1,184,489	1,034,181	697,045	977,753
	11 mos.	2,523	59,582,755	6,404,613	71,277,466	9,766,246	12,081,441	2,046,899	25,668,886	2,469,018	52,189,143	73.2	19,088,323	16,069,534	12,516,196	10,324,153
Ann Arbor	Nov.	293	461,277	17,609	496,581	45,411	104,474	14,203	198,232	13,563	375,334	75.6	121,247	100,263	77,563	89,235
	11 mos.	293	5,366,732	179,879	5,798,779	629,985	1,202,645	159,896	2,167,726	140,054	4,267,961	73.6	1,530,818	1,237,535	963,760	838,191
Western Maryland	Nov.	876	1,575,851	19,385	1,659,910	234,995	306,843	40,021	423,795	39,712	1,053,096	63.4	606,814	506,814	572,120	563,110
	11 mos.	874	16,461,810	295,837	17,415,496	2,768,191	3,339,622	467,031	4,539,574	458,905	11,611,852	66.7	5,803,644	4,843,644	5,375,554	4,926,472
Western Pacific	Nov.	1,051	1,197,942	56,178	1,359,848	189,475	269,820	66,413	487,196	42,997	1,091,709	80.3	268,139	160,707	207,268	406,772
	11 mos.	1,051	13,819,686	1,306,120	16,418,457	2,967,934	2,999,105	789,549	5,524,486	544,049	13,273,554	80.8	3,144,903	1,961,547	2,453,225	2,348,345
Wheeling & Lake Erie	Nov.	511	1,336,279	16,689	1,447,942	179,312	413,395	54,292	497,111	60,494	1,200,824	82.9	247,118	149,211	193,178	448,264
	11 mos.	511	18,730,660	230,303	20,222,448	2,437,255	4,754,613	432,182	5,598,232	535,684	13,753,819	68.0	6,468,629	4,929,316	4,955,927	4,652,114
Wichita Falls & Southern	Nov.	203	102,092	1,159	107,839	14,061	12,012	2,024	31,298	3,868	63,263	58.66	44,576	39,191	31,130	57,807
	11 mos.	181	956,673	17,093	1,038,239	169,276	122,604	29,028	302,785	46,444	670,116	64.54	368,123	307,138	239,793	276,918

News of the Week

(*Continued from page 163*)

trict for eleven months had a net of $122,091,988, at the rate of 4.07 per cent. For the same period in 1928, their net amounted to $121,242,614, at the rate of 4.11 per cent. Operating revenues in the Southern district for eleven months amounted to $709,660,931, an increase of one-tenth of one per cent, while operating expenses totaled $535,295,235, a decrease of two-tenths of one per cent. The net in the Southern district in November amounted to $7,844,633, while in the same month in 1928 it was $12,650,508.

The Western District roads for eleven months had a net of $467,009,061, at the rate of 4.65 per cent. For eleven months in 1928, they had a net of $433,191,202, at the rate of 4.38 per cent. Operating revenues in the Western district for eleven months amounted to $2,242,681,147, an increase of 2.6 per cent over the same period last year, while operating expenses totaled $1,568,589,945, an increase of nine-tenths of one per cent. For November, the net railway operating income in the Western district amounted to $37,129,704. The net in November, 1928, totaled $45,047,245.

CLASS I RAILROADS—UNITED STATES

	Month of November 1929	1928
Total operating revenues	$499,210,861	$532,055,881
Total operating expenses	372,167,148	374,861,114
Taxes	30,000,218	34,203,782
Net railway operating income	86,669,467	113,520,063
Operating ratio—per cent	74.55	70.46
Rate of return on on property investment	3.64%	4.84%
	Eleven months ended November 30	
Total operating revenues	$5,882,985,157	$5,692,846,075
Total operating expenses	4,190,869,790	4,123,449,957
Taxes	379,428,893	360,585,613
Net railway operating income	1,201,172,558	1,099,823,573
Operating ratio—per cent	71.24	72.43
Rate of return on on property investment	5.04%	4.68%

The Canadian Roads in November

Net operating revenue of $43,127,464 for the period from January to the end of November, 1929, are shown in the monthly statement of earnings and expenses issued by the Canadian National. These earnings for the eleven months compare with $53,549,291 in the 1928 period, a decrease of $10,421,826. During the eleven months of the present year, gross earnings of the Canadian National were $240,891,733 against $253,030,877 in the same period of 1928, a decrease of $12,139,144.

The operating ratio during the eleven months of 1929 was 82.10 per cent as against 74.84 per cent in the 1928 period.

For the month of November, 1929, gross earnings of the system reached $20,204,002 as against $26,558,312 in November, 1928, a decrease of $6,354,310. Operating expenses in November, 1929, were reduced by $2,190,889 from the figure of November, 1928. Net revenues in November, 1929, were $2,975,759, as compared with $7,139,180, a decrease of $4,163,420.

The statement of earnings and expenses of the Canadian Pacific for November continues to reveal the imprint of the wheat tie-up in the Dominion, with the road's net revenues for that month at $4,549,649, as contrasted with $7,306,109 in the corresponding month of last year, a decrease of $2,756,460. Gross revenues at $16,121,194 were lower by $8,237,473, while operating expenses were lower by $5,481,013.

For the eleven-month period of the fiscal year ended with November, net revenues are shown at $39,991,275, as compared with $48,537,678 in the corresponding period of last year, a decrease of $8,546,402. By the same comparison, gross earnings are shown down by $13,743,476, while operating expenses were down by $5,188,073.

The following table shows the earnings, expenses and net revenues for the month of November and for the eleven-month period ending with November.

	NOVEMBER 1929	1928	Dec.
Gross	$16,121,194	$24,358,668	$8,237,473
Exp.	11,571,544	17,052,558	5,481,013
Net	$4,549,649	$7,306,109	$2,756,460
	ELEVEN MONTHS ENDING		
Gross	$194,212,723	$207,947,199	$13,734,476
Exp.	154,221,447	159,409,521	5,188,073
Net	$39,991,275	$48,537,678	$8,546,402

Canadian Pacific's High Pressure Locomotive

Designs have been completed by the Canadian Pacific, the Superheater Company and the American Locomotive Company, and construction work is to be started at the Angus shops of the railroad on one of the double-pressure steam locomotives reported in the *Railway Age* of May 18. The locomotive is to have a tractive force of 83,200 lb. and will be operated on a high steam pressure principle. It will be one of the most powerful locomotives in the world and will supersede the 5900 series as the most powerful in the British Empire. The tractive effort will be 5,200 lb. more than the 5900 series, and 37,900 lb. greater than the 2800 series of fast and modern passenger locomotives. The new locomotive will have a two-wheel leading truck, five pairs of driving wheels and a four-wheel trailing truck; it is to be known as the Canadian-Pacific T-4-a class. The locomotive alone will weigh about 466,500 lb. and the tender 297,000 lb.; it will operate under multiple pressure and will burn fuel oil. High pressure steam will be used in the middle cylinder at 850 lb. pressure; this steam will be generated by heat interchange coils in the high pressure drum, the coils being part of a sealed system of tubes and headers which will contain distilled water. A pressure of about 1,350 lb. will be carried in the closed generating system and heat interchange coils. The forward end of the boiler will be of the conventional type and will generate steam at 250 lb. pressure per square inch. The high pressure steam will be superheated and after passing through the high pressure cylinder will be supplemented by superheated steam from the low pressure boiler and fed to the two low pressure cylinders: The exhaust from the outer or low pressure cylinders will be utilized in a feedwater heater in the customary way as well as furnishing the usual stack draft. The locomotive will have three cylinders, the high pressure or middle cylinder being 15½-in. diameter by 28-in. stroke and the two outer or low pressure cylinders 24-in. diameter by 30-in stroke. The tender will be a duplicate of the existing types with a fuel oil capacity of 4,100 Imperial gallons and water capacity of 1,200 Imperial gallons.

Wood-Preservers' Association Program

The American Wood-Preservers' Association will hold its twenty-sixth annual convention at Seattle, Wash., on January 28-30. The program is as follows:

Tuesday, January 28—Opening exercises
Report of secretary-treasurer
Report of Committee on Preservatives
Address—"Future Problems for Research," by Ernest Bateman, Forest Products Laboratory, Madison, Wis.
Address—"Zinc Chloride as a Wood Preservative—Past, Present and Future," by L. C. Drefahl, Grasselli Chemical Company
Report of Committee on Car Lumber
Report of Committee on Treatment of Douglas Fir Lumber
Report of Committee on Material Handling and Plant Operation
Address—Fire Resistance of Wood Treated with Zinc Chloride and Ammonium Phosphate, by George M. Hunt, T. B. Truax and C. A. Harrison, Forest Products Laboratory
Address—Preservative Treatment of Englemann Spruce Ties, by J. D. MacLean, Forest Products Laboratory
Address—The Effect of Blue Stain on the Penetration and Absorption of Preservatives, by Wallace Marion Saling
Wednesday, January 29—Report of Committee on Non-Pressure Treatment of Poles
Report of Committee on Pole Service Records
Report of Committee on Posts
Address—Service Records of Treated and Untreated Fence Posts, by R. M. Wirks, Forest Products Laboratory
Address—The Fraser River Bridge—Quesnel, B. C., by P. E. Philip, Deputy minister and public works engineer, Department of Public Works, Victoria, B. C.
Address—The Use of Creosoted Douglas Fir on the Pacific Lines of the Southern Pacific Company, by W. H. Kirkbridge, engineer maintenance of way and structures, Southern Pacific Company, San Francisco, Cal.
Address—Use of Creosoted Douglas Fir Piles and Timbers in Dock and Bridge Construction, by R. J. Middleton, assistant chief engineer, Chicago, Milwaukee, St. Paul & Pacific
Thursday, January 30—Report of Committee on Tie Service Records
Address—Why is There a Termite Problem in California? by Charles A. Kofoid, professor of zoology, University of California
Address—Termites and the Retail Distribution of Treated Timber Products, by Merle Randall, professor of chemistry, University of California
Address—An International Termite Exposure Test, by G. M. Hunt, Forest Products Laboratory, and T. E. Snyder, United States Bureau on Entomology
Address—Studies of Heat Conductivity in Wood. Results in Steaming Round Southern Pine Timber, by J. D. MacLean, Forest Products Laboratory
Report of Committee to Determine the Strength of Douglas Fir with Relation to Moisture Content
Address—The Effect of Partial Seasoning on the Strength of Wood, by T. R. C. Wilson, T. A. Carlson and R. F. Luxford
Report of Service Bureau Board
Closing Business

A special train will leave Chicago at 9:30 on Thursday morning, January 23 over the Chicago, Burlington & Quincy-Union Pacific, stopping enroute at the Galesburg, Ill., Laramie, Wyo., Pocatello, Idaho and The Dalles, Ore., treating plants of these two roads and at the Long-Bell and Weyerhauser saw mills at

Longview, Wash., arriving in Seattle on Monday evening, January 27.

Investigation of Holding Companies Proposed

An investigation by the House committee on interstate commerce of the ownership or control of railroad securities by holding companies, investment trusts, individuals, etc., is proposed in a resolution introduced in the House on January 7 by Representative Parker, chairman of the committee, following the recommendation made by the Interstate Commerce Commission in its annual report that Congress give serious consideration to the question of possible legislation on the subject. The commission said that the acquisition of substantial interests in carriers by trading, investment, and holding companies, as well as by individuals, may tend to defeat the subjection of railroad unifications to "the orderly processes of a carefully planned scheme of public regulation."

The resolution provides for the investigation, by the committee or a subcommittee, for the purpose of obtaining information necessary as a basis for legislation, of "the ownership and the control, directly or indirectly (through stock ownership or control or otherwise), of stock, securities or capital interests in any common carrier engaged in the transportation of persons or property in interstate commerce, by holding companies, investment trusts, individuals, partnerships, corporations, associations and trusts, and the organization, financing, development, management, operation and control of such holding companies, investment trusts, partnerships, corporations, associations and trusts, with a view to determining the effect of such ownership and control on interstate and foreign commerce, and, to the extent necessary to determine the effect of such ownership and control, to make like investigation of common carriers."

The committee is to report to the House the results of its investigation, including recommendations for legislation.

It is the intention to conduct this broad investigation before taking up the consideration of the consolidation legislation which has been pending before the committee for several years and it is expected that as a result some changes may be made in the provisions of the Parker and Fess bills which were reported from the House and Senate committees.

Senator Couzens, chairman of the Senate committee on interstate commerce, had said that he would insist on an investigation of the holding company situation before there is any legislation on the subject of consolidation, but that he was not adverse to an investigation by the Interstate Commerce Commission itself. Senator Couzens is particularly interested in his communications bill on which he desires to conclude hearings before taking up railroad legislation. He was one of the three members of the committee who voted against a favorable report on the Fess consolidation bill at the last session, he said, because of the lack of information on holding companies. He said he thought an investigation should be made of the influence of holding companies and investment trusts.

Traffic

The Ohio Valley Shippers' Advisory Board will hold its next meeting at the Elks' City Club, East Broad Street, Columbus, Ohio, on January 21.

"Winter in New England," the annual guide to winter sports issued by the Boston & Maine, has just come out. It gives a list of 29 carnivals, and sports by other names, which are scheduled for various places in Maine, New Hampshire, Vermont and Massachusetts, beginning with one at Plymouth, N. H., on January 20, and ending with the Vermont State Championship ski jump, at Battleboro, Vt., on March 1.

The Gideon & North Island, on January 1, 1930, was taken over and is being operated as a part of the St. Louis Southwestern. The jurisdiction of all general and local officers of the St. Louis Southwestern has been extended over this line. The Gideon & North Island is a line operated for freight only between Malden, Mo., and North Island, 21 miles, connecting the St. Louis Southwestern with the St. Louis-San Francisco, at Malden and at Gideon.

The Illinois Central and the Chicago, Rock Island & Pacific, have improved their Chicago-Hot Springs passenger service southbound by cutting the time one hour and ten minutes. The cars, which are carried on the Panama Limited to Memphis, leave Chicago at 12:30 p.m. as formerly, but arrive in Hot Springs at 7:50 a.m. instead of 9 a.m. Returning, they leave Hot Springs at 3:40 p.m. instead of 3:30 p.m. and arrive in Chicago at 9:30 a.m. as formerly.

Fast freight shipments from Chicago during November established a record for that territory, when, of the 60,233 package cars to all sections of the continent, 57,665 or 95.74 per cent, reached destination on schedule, according to the Chicago Association of Commerce. This exceeds the previous high record of 94 per cent set by the railroads serving Chicago shippers a month ago, and is far ahead of November last year, when 91.37 per cent moved, according to timetables. Of the cars arriving late last month, 2,001, or 3.32 per cent, were one day behind time, while only 567, or less than 1 per cent, were two days late or longer.

The Interstate Commerce Commission acting on a request from certain southwestern lines plans to incorporate in the record in the Hoch-Smith cotton rate proceeding the results of a test which is being made to determine the revenue effect of the rates recommended in the proposed report on traffic within and from the Southwest. With the understanding that statements showing the result of this test will be distributed to all interested parties not later than January 27, the case is reopened and assigned for further hearing in Washington, on February 3, for the sole purpose of receiving evidence with respect to this test.

The War Department appropriation bill, reported to the House on January 6, included $55,000,000 for maintenance and improvement work on rivers and harbors, for the fiscal year 1931, including only the allotments for projects now authorized. The total includes $6,020,000 for improvement of the Missouri from Kansas City to the mouth and $980,000 for maintenance; $2,886,000 for improvement from Kansas City to Sioux City, $1,886,760 for lock and dam construction on the Ohio and $1,150,000 for open-channel work. The total estimate for the improvement of the Missouri is $46,000,000 but the total amount for the completed project has not yet been authorized.

The Allegheny Regional Advisory Board, in co-operation with the A. R. A. Car Service Division, is directing special activity toward the complete unloading of freight cars, especially cars which have carried automobiles and contractors' material. Co-operation is sought among the receivers of motor cars and with the contractors and constructors, the latter through the Associated General Contractors of America, a National organization. A car is in fit condition to receive lading only as each preceding consignee accepts the responsibility of completely unloading his consignment, including, of course, the dunnage, blocking, bracing, etc. When cleaning out is left to be done by the railroad there is a loss of one day for each car. Each receiver is exhorted to remember his duty to his fellow shippers. To penalize the delinquent receiver through imposition of a tariff or other charge, is annoying.

The Great Lakes Regional Advisory Board, following the regular meeting at Cleveland, Ohio, on December 18, predicted that the total requirements of freight cars by shippers in that region for the first quarter of 1930, will be a trifle less than the number used in the first quarter of 1929. This estimate is regarded as encouraging, as in the first quarter of 1929, there was an abnormal increase in the shipments of automobiles; but the estimated shipments for the coming quarter are much ahead of the corresponding quarter of 1928. The estimated requirements for automobiles in the coming quarter amount to 132,696 freight cars. In iron and steel the situation is much the same. Increases are expected in grain and grain products, in coal, coke, salt, cement, brick, fertilizers and other important commodities. Decreases are expected in fruits, potatoes, live stock, lumber, petroleum, sugar, machinery and iron ore. The Chambers of Commerce of 16 cities report bright prospects in all lines.

The Public Utility Commisioners of New Jersey have aproved the discontinuance of the agency at Mansfield street station, Belvidere, N. J., of the Lehigh & Hudson River, freight to be handled hereafter through the agency at Great Meadows; also the discontinuance of the agency at Buttzville, freight to be attended to by the agent at Great Meadows, and a shed being provided for passengers; also the discontinuance of the agency at McAfee, where a shelter will be maintained for passengers, and freight will be attended to by the agent either at Hamburg or at Vernon.

The grievance of New Jersey interests against trunk line freight rates because rates from the west are no less to Jersey City than to New York, has appeared in a new form, in the shape of a complaint, filed with the Interstate Commerce Commission on January 6, by the New Jersey Traffic Advisory Committee, of Jersey City, Milton P. Bauman, counsel. The complaint goes into the cost of floating cars in the harbor, and into other details not touched upon in previous complaints. The defendants named include many steamship lines as well as railroads, and number 84 altogether.

The Yankee Clipper

The new express train between New York and Boston, announced some weeks ago by the New York, New Haven & Hartford, is to be put on about April 1, and its name is to be the "Yankee Clipper." Trains are to leave each city at 4 p.m. and run through in four hours, 45 minutes, or 15 minutes better than the best time heretofore scheduled.

Barge-Rail Cotton Rates Suspended

The Interstate Commerce Commission has suspended from December 31 to July 31 freight schedules filed by tariff-publishing agents for the railroads and the Inland Waterways Corporation naming joint rail-barge rates on cotton, in connection with the federal barge line which were lower to New Orleans than to Houston and Galveston, Tex. The tariffs were suspended on protests of the Houston Cotton Exchange and Board of Trade, and the Mobile (Ala.) Chamber of Commerce. They were filed in purported compliance with the commissioner's order in *Ex Parte* 96 in which it required the establishment of joint rates, but the Texas interests objected to the rates from the southwest to New Orleans while the Mobile interests protested against the proposed rates from the southeast.

Revision of Petroleum Rates Proposed

An extensive revision of freight rates on petroleum and its products in the Southwest and the Mississippi Valley, including some material increases, is recommended in proposed reports submitted to the Interstate Commerce Commission by Examiners Burton Fuller and Philip S. Peyser in Parts 4 and 4-A of Docket No. 17,000, the rate structure investigation under the Hoch-Smith resolution. Part 4, the general petroleum investigation involves rates from southwestern refining points and groups and shipping points to destinations in the Mississippi Valley, while Part 4-A involves rates from, to and between points in the Southwest. Exceptions are to be filed by March 1 and the cases are both assigned for oral argument before the commission on March 5. In the latter case the examiners propose 26 findings relating to scales published in appendices.

Railroad Control of Bus Line Complained Of

A complaint directed against the acquisition by the Union Pacific of control of the Interstate Transit Lines as being in violation of provisions of the transportation act has been filed with the Interstate Commerce Commission by the Pickwick-Greyhound Lines. It is alleged that the Union Pacific on or about July 1, 1929, purchased all the outstanding stock of the bus company, obligated itself to purchase new equipment to the amount of $1,080,000, assumed obligation and liability in respect of the securities of the company without authority of the commission under section 20-a of the act and "has pledged its resources as a guarantor of the obligations of a public utility" in violation of the act. It is also asserted that by means of the acquisition the Union Pacific extended its lines without a certificate of the commission and that through the Transit Lines the Union Pacific charges a compensation for service different from the rates specified in its tariffs, and in other ways violates provisions of the act generally regarded as applying primarily to railroad carriers.

I.C.C. Reduces Its Docket in 1929

The Interstate Commerce Commission announces that it reduced by 280 its docket of formal cases and also materially reduced the time between the filing and the disposal of litigation before it during the year just closed, under the chairmanship of Commissioner E. I. Lewis. When the year 1929 opened there were 2706 formal rate cases pending. When it closed there were 2426. This is the smallest number of cases pending at any time since September, 1926. A maximum of 2852 was reached in November, 1927.

Similar advances were made during the year in other activities of the commission. Among the major accomplishments of the year was the issuance of the plan of consolidation of railroads, and the closing, by argument, of the larger Hoch-Smith freight rate readjustment cases, including the grain and livestock cases, and the eastern and western trunk line class rate cases. These arguments were unprecedented in the matter of time. They absorbed weeks and but for this and the time required for working out the consolidation plan, a larger reduction would have been made in the cases pending.

Twenty-six additional examiners have been added to the rate force and put through preliminary training, and it is expected that a greater advance in reducing the docket will be made this year.

Foreign

P. L. M. Inaugurates New Paris-Riviera Service

As a companion to its famous "Blue Train" and "Paris-Mediterranean Express," which have offered nightly service between Calais and Paris and points along the French Riviera for a number of years, the Paris, Lyons & Mediterranean Railway (France) has recently inaugurated a new daily train between Paris and the fashionable Riviera centers. The new train, known as the "Côte d'Azur Pullman Express," made its first regular run on December 10, and is the first de luxe train offering a daytime service to the Riviera. The number of passengers carried is strictly limited to the seating capacity of the six 24-passenger Pullman cars which comprise the standard equipment in each direction and which were built and decorated especially for this service. Extra fares of approximately $7.75 are charged.

Southbound, the new train leaves Paris at 8.50 a. m. and reaches Ventimiglia, on the Franco-Italian frontier, at midnight, while in the opposite direction it leaves Ventimiglia at 7:35 a. m. and arrives at Paris at 11:10 p. m. The average speed for the 700-mile run is about 48 miles per hour.

Southern Section of Persian Trunk Line Opened

The southern section of the trans-Persian Railroad, which has been under construction for some time by Ulen & Company (New York), was formally opened and dedicated on January 7 by Reza Khan, Shah of Persia, according to cable advices received in this country. The Shah boarded his private imperial train at Dizfoul, the present northern railhead, and made the first passenger journey over the new line from there to Bandar Shahpour, the road's southern terminus on the Persian Gulf. He also inspected the new port which has been built by Ulen & Company at Bandar Shahpour to allow direct transfer of freight from the railway to ocean-going steamers.

The new railroad, the first trunk line in Persia, will run about 1,000 miles north from Bandar Shahpour through Dizfoul and Teheran, capital of Persia, to Bandar Shah on the Caspian Sea. Its gage is 4 ft. 8½ in. throughout, while bridges, tunnels, curves, rolling stock, etc., have all been planned so as to permit future connection with the European road now ending at Bagdad.

A complete description of the road, together with a sketch map of the proposed route, was published in the *Railway Age* of June 2, 1928, (page 1307), while a report of construction progress on the southern (American) section and on the northern section, being built by German engineers, together with a brief description of the 3,500-ft. steel bridge across the Karun river at Awaz, appeared in the *Railway Age* of December 21, 1929.

Equipment and Supplies

Locomotives

THE ALIQUIPPA & SOUTHERN is inquiring for one or two eight-wheel switching locomotives.

THE BESSEMER & LAKE ERIE has ordered nine locomotives of the 2-10-4 type from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of December 14.

THE SEABOARD AIR LINE has ordered eight locomotives of the 2-10-0 type from the Baldwin Locomotive Works. Inquiry for 15 locomotives was reported in the *Railway Age* of November 9.

THE AMERICAN SMELTING & REFINING COMPANY has ordered one locomotive of the 4-6-0 type from the Baldwin Locomotive Works. This locomotive is to be used by the Buchauf Mining Company, Newfoundland.

THE DENVER & RIO GRANDE WESTERN has ordered ten Mallet (2-8-8-2) type locomotives from the American Locomotive Company. Inquiry for this equipment was reported in the *Railway Age* of November 23.

Freight Cars

THE ANGLO-MEXICAN PETROLEUM COMPANY is inquiring for 5 double compartment tank cars of 5,000 gal. capacity.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC is inquiring for 500 single deck and 250 double deck stock cars.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION is inquiring for 20 flat cars of 20 tons' capacity.

THE BANGOR & AROOSTOOK is inquiring for 200 car sets of steel underframes and superstructures for box cars.

THE HERCULES CEMENT COMPANY has ordered nine cement cars from the Standard Steel Car Company.

THE SEABOARD AIR LINE is inquiring for 1,000 single sheathed box cars of 40 tons' capacity.

THE UNION CARBIDE COMPANY has ordered nine steel hopper cars of 50 tons' capacity from the American Car & Foundry Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 500 automobile cars from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of October 26.

THE CHICAGO, BURLINGTON & QUINCY will build 50 flat cars of 40 tons' capacity and 50 flat cars of 50 tons' capacity in its own shops. Inquiry for this equipment was reported in the *Railway Age* of October 26.

Passenger Cars

THE ERIE is inquiring for 10 gas-electric rail motor cars.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 10 baggage cars.

THE CANADIAN NATIONAL is now inquiring for 12 lounge cars, 12 six-compartment sleeping cars and 5 dining cars.

THE ILLINOIS CENTRAL is inquiring for two self-propelled rail motor cars.

THE MISSOURI PACIFIC has ordered 10 coaches from the St. Louis Car Company, and 5 parlor-dining cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of November 9.

Iron and Steel

THE CENTRAL OF NEW JERSEY has ordered 14,615 tons of 100-lb. and 130-lb. rail from the Bethlehem Steel Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 57,100 tons of rail, the distribution being as follows: 26,100 tons from the Illinois Steel Company, 13,600 tons from the Inland Steel Company and 17,400 tons from the Colorado Fuel & Iron Company. An additional 10,600 tons for the Colorado & Southern will be ordered within a few days.

Machinery and Tools

THE MISSOURI-KANSAS-TEXAS has ordered from Manning, Maxwell & Moore, Inc., one Greenlee Brothers & Company No. 545 all-electric ball bearing, double end car tenoner, with gaining heads and other attachments for car decking, for its Denison, Texas, car shops.

Signaling

THE FORT WORTH & DENVER CITY has ordered from the General Railway Signal Company 51 color-light signals, type D, and six type SA, together with relays and other material.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for an electro-pneumatic interlocking for JE Tower, Jamaica (Long Island) N. Y. The machine will be Model 14, with 83 levers.

THE MISSOURI PACIFIC has contracted with the Railroad Supply Company for the installation of automatic block signals on its single track lines from Osawatomie, Kan., to Council Grove; from Gypsum City, Kan., to McCracken; from Sugar City, Colo., to Pueblo; from Cole Junction, Mo., to Booneville; from Riverton, La., to Urania, and from Collinston, La., to Monroe, a total distance of about 400 miles.

Supply Trade

The Pyle-National Company has moved its New England branch office to 901 Statler building, Boston, Mass.

A. C. Torbert has established an office at 75 East Wacker drive, Chicago, to engage in the sale of railroad, industrial and contractors' equipment.

Sydney B. Grant has been appointed sales representative for the **Buda Company,** Harvey, Ill. Mr. Grant will have his headquarters at 30 Church street, New York City.

The Gulick-Henderson Company, Inc., inspecting engineers, metallurgists and chemists has moved its executive offices to 19 West Forty-Fourth street, New York City.

L. E. Fries has joined the sales force of the **United States Electrical Tool Company,** Cincinnati, Ohio, as Cincinnati district manager succeeding **R. H. Clore** who was recently appointed general sales manager.

Alec S. Field, formerly with the Shell Petroleum Corporation, Dallas, Texas, in charge of the eastern division, has resigned to go with the **Naylor Pipe Company** as assistant director of sales with headquarters at Chicago.

The Barco Manufacturing Company, Chicago, has completed a three-story addition to its factory in that city. The building, which doubles the former floor space is of reinforced concrete construction.

Fred Speer for the past ten years with the Philadelphia office of Gustin Bacon Manufacturing Company as mechanical representative, on January 1 became associated with the **Joseph Dixon Crucible Company,** Jersey City, N. J. as special railroad representative for its railroad products.

William H. Beck has become associated as sales engineer with the **Fort Pitt Steel Casting Company,** McKeesport, Pa., makers of carbon and alloy steel castings by the electric furnace process. **J. Trantin, Jr.** has become associated with the same company as metallurgical engineer.

William Crane Babbitt has joined the staff of the **Industrial Truck Association,** New York City, as field engineer. Mr. Babbitt is a graduate of the University of Michigan, and has had ten years experience in the management of industrial plants and in the trade association field.

N. B. McRee has been appointed railroad sales representative of the **United States Graphite Company,** Saginaw, Mich. to succeed Walter R. Pflasterer, who is no longer connected with the company. Mr. McRee's headquarters

are at 839 Railway Exchange building, Chicago.

The American Creosote Works, New Orleans, La., has secured a site at Jackson, Tenn., and will immediately begin the construction of a creosoting plant, the major items of which will include two high pressure creosoting cylinders 8 ft. x 150 ft. with the necessary tram cars, power plant and engine room equipment, several steel buildings, and equipment for adzing and boring cross ties. This plant will be equipped for the treating and handling of material of all kinds, but will specialize in the preservation of hardwood cross ties. Bids will be received early in January.

A. F. Marwick, formerly general sales manager for the Pettibone-Mulliken Company, has joined the Chicago district sales staff of the **Taylor-Wharton Iron & Steel Company** and William Wharton, Jr. & Company, Inc. **G. V. Wood,** formerly located at the Highbridge plant of the Taylor-Wharton Iron & Steel Company is now western sales manager for Taylor-Wharton Iron & Steel and associated companies. Mr. Wood's headquarters are at San Francisco, Cal. **J. R. Van Rensselaer,** formerly sales representative with Taylor-Wharton's San Francisco distributor, is now located at the New York office of William Wharton Jr. & Company, Inc.

S. L. Williams has been appointed district engineer for the eastern district of the **Westinghouse Air Brake Company** at New York. Mr. Williams was graduated from the Massachusetts Institute of Technology as a mechanical engineer in 1923, and immediately entered the employ of the Westinghouse Air Brake Company as special apprentice in the Wilmerding works. After serving for several months as inspector in Boston and New York, he was, in 1925, made assistant to the district engineer at the latter place. In 1928 he was transferred to the west coast and promoted to assistant district engineer of the Pacific district at San Francisco, which position he held until his recent promotion.

Frederick V. Green, formerly vice-president of the Pittsburgh Testing Laboratory has joined the force of the **Gamewell Company,** Newton Upper Falls, Mass., as a special representative in connection with railroad and industrial work. This company is one of the oldest manufacturers of fire alarm apparatus in the United States. Mr. Green will have his headquarters at the New York office of the company, Room 3054, Grand Central Terminal. Previous to his service with the Pittsburgh Testing Laboratory Mr. Green served with the Westinghouse Air Brake Company at New York until 1918 and then became associated with the Baldwin Locomotive Works as export manager in charge of South African territory, with headquarters at Johannesberg, South Africa.

The Niles Tool Works Company, Hamilton, Ohio, now has direct sales offices at Chicago, Detroit, New York and Pittsburgh. The Chicago office located in the Chicago Daily News building is in charge of **A. C. Wais,** western manager, and associated with Mr. Wais are **F. T. McDonough** and **W. R. Mullinix;** the Chicago office also directs sales in the St. Louis territory; **B. A. Donahue** continues to represent the company in that territory with office in the Railway Exchange building. The Detroit territory is in charge of **G. R. Shields** who was formerly at the Hamilton plant; Mr. Shields has his headquarters in the Curtis building. The Pittsburgh territory continues to be served by **P. C. McBeth,** Pittsburgh manager and **L. McConnell,** with offices in the Grant building; the Pittsburgh office directs sales in the Cleveland territory and this territory is served by **C. A. Tankred** with office in the Schoffield building. The New York office in the New York Central building is in charge of **D. S. Woods** eastern manager; **S. M. Matchett** and **J. A. Ross** are associated with Mr. Woods; Mr. Ross will continue to handle the Philadelphia territory with office in the Widener building. The Cincinnati territory is handled from the general offices at Hamilton; the general sales work in connection with railroad tools is under the supervision of **A. T. Kuehner** at Hamilton. Sales agents have been appointed as follows: The **C. F. Bulotti Machinery Company,** San Francisco, Cal.; **Hallidie Machinery Company,** Seattle, Wash.; **D. S. Mair Machinery Corporation,** Houston and Dallas, Texas. The southeastern territory will be handled by **Pratt & Whitney Company** and **L. A. Quinn,** Birmingham, Ala.

The interests of the **Worthington Pump & Machinery Corporation,** New York, are now served in the California Territory through a local company, the **Worthington Machinery Corporation of California, Ltd.,** with headquarters at Los Angeles and San Francisco. **H. D. Cornell,** who has been president of the **Worthington Machinery Corporation** of Oklahoma is president of and will direct the new corporation, moving to California for that purpose. **George W. Hawkins,** who has been director of sales at New York, is now with Worthington California as vice-president. The new corporation has taken over the sales and engineering staff and the warehouse facilities of the Worthington Company, Inc., in California, and will hereafter handle all that territory.

General Steel Castings Corporation Building New Plant

The General Steel Castings Corporation is constructing a plant at Eddystone, Pa., which, upon its completion during the next few months, will give the company four plants in the United States. The other three plants include the Seaboard works at Chester, Pa., which was acquired from the American Locomotive Company, the Thurlow works at Chester, Pa., which was acquired from the American Steel Foundries, and the Commonwealth plant at Granite City, Ill., which was purchased from the Commonwealth Steel Company.

The Eddystone plant, the main bay of which is 996 ft. by 270 ft. and which has cranes with 90-ft. spans and 100 tons' capacity, will be able to produce locomotive frames 65 ft. in length and with cylinders cast integral. The equipment will include a two-position shake-out house with a sand-handling and reclaiming system, machinery for a sand-blast process of cleaning and ventilating and dust collecting systems.

The sand-blast installation involves the design of a single unit that will provide for the cleaning of large locomotive frames up to 65 ft. long, as well as a great volume of smaller work. This will be accomplished in a special sand-blast room, 70-ft. long by 15-ft. high, which easily accommodates these 65-ft. castings on a train of coupled cars. This room can readily be divided into three separate compartments with the individual cars, uncoupled, handling work individually in each compartment. This room is provided with ventilation to give best working conditions, operating as a single room or as individual units with dust-collecting equipment located just outside the building.

Obituary

Irving T. Hartz, president of the Morden Frog & Crossing Works, who died on December 17, following an operation, was born in Peoria, Ill., on March 21, 1861, and, after a public school education, engaged in the grain business. Later he was in railroad employ and still later was in charge of the offices and finances incident to the construction of the Croton Aqueduct in

Irving T. Hartz

New York. From 1889 to 1892 he was secretary and manager of the Calumet Iron & Steel Co. and later he was appointed receiver. In March 1896, he was elected vice-president and treasurer of the Morden Frog & Crossing Works, while from 1896 to 1899 he was also president of the Union Cold Storage Company and receiver for the James H. Walker Company. In 1907 he was elected president of the Morden Frog & Crossing Works, which position he held until his death.

Construction

BANGOR & AROOSTOOK.—This company has authorized the construction of new turntables at Oakfield, Me., and at Northern Maine Junction. The cost of each of these projects is estimated at $31,000.

BOSTON & ALBANY.—The contract for the construction of a new power house in connection with terminal improvements at Beacon Park, Allston, Mass., described in the *Railway Age* of December 28, was awarded to the J. F. Fitzgerald Construction Company, Boston, Mass.

CANADIAN NATIONAL.—In connection with improvements in its car ferry service between Cape Tormentine, N. B., and Port Borden, P. E. I., this company has authorized the construction of an automobile roadway leading to the ferry ramp and dredging at an estimated cost of $811,000 at Cape Tormentine; and of an automobile roadway, ramp and dredging at an estimated cost of $592,000, of a lay-up wharf at a probable cost of $192,000, and of oil storage facilities, pipe lines, etc., at an approximate cost of $172,000, at Port Borden. Some work has already been done by company forces, and contracts for the enlarging of the piers, the construction of the lay-up wharf and grading in connection therewith at the terminals have been awarded to the Northern Construction Company and to J. W. Stewart.

CANADIAN PACIFIC.—In connection with the Eastern Steamship Lines, Inc., and H. H. Raymond, this company has decided to construct a 50 to 75-room hotel at Lakeside, immediately outside of Yarmouth, N. S. Cottages to be erected on the hotel grounds will provide additional accommodations for guests. Owing to a change in the original plans, bids for the construction of a hotel to replace the Cornwallis at Kentville, N. S., will not be received until April. In connection with terminal improvements at Montreal, the executive committee of the Board of Aldermen of the city of Montreal has voted the sum of $225,000 for the construction of a subway under the Canadian Pacific tracks at Delorimier avenue. Plans are well advanced and construction will be started soon.

CANADIAN PACIFIC.—This company has authorized and has awarded contracts for the reconstruction of various bridges on its lines, as follows: Bridge 30.7 over Desnoyers Creek, Adirondack subdivision; bridge 42.8, Kingston subdivision; bridges 77.86 and 80.7, Peterborough subdivision; bridges 79.98, 90.7 and 92.19, Oshawa subdivision; bridges 13.3 and 25.9, Orangeville subdivision; bridge 0.5, over Saugeen river, Mount Forest subdivision; bridge 17.4, Walkerton subdivision, and bridge 6.3 over Grand river, Teeswater subdivision. Part of the work is to be done by company forces and contracts for other phases of the work have been awarded to the Dominion Bridge Company, Wells & Gray, Toronto, Ont., the Canadian Bridge Company, the Nelson River Construction Company, Toronto, Ont., the Hamilton Bridge Company, Hamilton, Ont., the Britnell Contracting Company, Toronto, Ont., the Sherwood Construction Company, Toronto, Ont., Campbell & Lavelle, Toronto, Ont., and Frank Munro, Montreal, Que.

CHICAGO, ROCK ISLAND & GULF.—Contracts for constructing a concrete and steel bridge across the Trinity river at Dallas, Tex., to cost $500,000, have been awarded, that for grading being placed with Robert Brothers, Chicago, and that for the bridge work to John W. Fox, El Reno, Okla.

DELAWARE & HUDSON.—The Public Service Commission of New York has notified this company that it does not consider as excessive the low bid of $56,642 submitted by F. H. Clement & Co., of Bethlehem, Penn., for the elimination of the Klondike crossing of this company's tracks in Cobleskill, N. Y. The commission has directed the railroad to award the necessary contract and commence work.

ERIE-DELAWARE, LACKAWANNA & WESTERN.—Elimination of seven grade crossings of these railroads in and just west of Horseheads, N. Y., has been ordered by the Public Service Commission of New York. Crossings of the Erie tracks on the Horseheads-Corning county highway, Brown road and Chemung street and of the Lackawanna on the Horseheads-Corning county highways, Brown road, Lackawanna avenue and Hallet street will be closed and all traffic diverted to a new highway which will cross the Erie tracks on an overhead structure and pass beneath the elevated grade of the Delaware, Lackawanna & Western tracks. The total cost, exclusive of land and damages, is estimated at $382,000.

LEHIGH VALLEY.—The Public Service Commission of New York has been asked to approve the construction at grade of a switching track across Third street, Ithaca, N. Y., to connect this company's lines with the property of the Ithaca Junk Company. Construction of the new track was approved by the city of Ithaca on December 11. The commission has directed the elimination of the Dingens street crossing of the Lehigh Valley in Buffalo, N. Y., by carrying the street under the tracks on the present line. The cost is expected to be between $200,000 and $250,000.

NEW YORK CENTRAL.—This company has awarded contracts as follows: To the Edward J. Duffy Company, Inc., of New York City, for the construction of duct lines and splicing chambers near Fordham freight station at Williamsbridge, N. Y.; to the John J. Bradley Engineering & Contracting Company, New York City, for the construction of openings in the center walls of the Park avenue tunnel between Fifty-Ninth and Ninety-Sixth streets, New York City; to the Railroad Water & Coal Handling Company, Chicago, for the erection of a water treating plant for the existing water station at East Palmyra, N. Y.; to the Arthur McMullen Company, of New York City, for the construction of platforms, canopies, driveways, etc. at the Sixtieth street terminal, New York City, in connection with the West Side improvement plan; to the Scott Brothers Construction Company, Inc., Rochester, N. Y., for the elimination of the grade crossing of Fort Hunter road at Tribes Hill, N. Y., and to the Walsh Construction Company, Syracuse, N. Y., for the construction of a pedestrian subway under the railroad tracks at New Hamburg, N. Y. This company has also been notified that the Public Service Commission of New York does not consider as excessive the low bid of the Walsh Construction Company, $56,048, for the elimination of Pierce's crossing in Theresa, N. Y. Work is to be started as soon as possible.

NEW YORK CENTRAL.—The Public Service Commission of New York has ordered the elimination of grade crossings on this company's lines as follows: Goodyear and Miller avenues, Buffalo, N. Y., by carrying the streets under the railroad tracks at an estimated combined cost of $395,000; Sweet's crossing on the Skaneateles-Camillus county highway, one mile west of Mortisco, N. Y., by carrying the road over the tracks west of the present crossing, at a probable cost of $118,000; Bronson crossing, two miles east of Vernon, N. Y., by carrying the highway over the tracks according to a plan submitted by the railroad, at a probable cost of $103,800; Railroad avenue crossing of nine New York Central and West Shore tracks in Palmyra, N. Y., by carrying the street over the tracks on an elevated structure west of the present crossing; the Rochester-Scottsville county highway crossing east of Genesee Junction, N. Y., by carrying the highway over the tracks west of the present crossing, at an estimated cost of $252,000; the Pines Bridge-Yorktown Heights crossing at Croton Lake station, N. Y., by closing the present crossing and diverting traffic to a new overhead crossing to be located north of the existing one, and three crossings in Clarence, N. Y. Plans for the installation of automatic flashing signals at Fort Hunter road crossing, Fort Hunter, N. Y., Seneca, Swift and Walnut street crossings, Waterloo, N. Y., and Franklin and Wheeler street crossings Tonawanda, N. Y., have been approved by the Public Service Commission.

NORFOLK & WESTERN.—A contract has been awarded by this company to H. M. Waugh, Columbus, Ohio, for the construction of a roadway bridge over the Norfolk & Western yards at Columbus. The approximate cost of the work is estimated at $80,000.

PENNSYLVANIA.—This road recently awarded to Arthur McMullen Company, New York, N. Y. a contract for the construction of an overhead bridge near Phelps Junction, Ontario County, N. Y. The project is expected to cost approximately $66,000. A second contract, involving an estimated expenditure of approximately $57,500 was awarded to the T. J. Foley Co., Philadelphia, Pa. for the erection of an overhead bridge over the Lincoln highway east of Coatesville, Pa.

Railway Finance

BENNETTSVILLE & CHERAW.—*Operation.*—The Interstate Commerce Commission has authorized this company to operate a line of railroad from Brownsville, S. C., southeasterly to Sellers, 10.4 miles, the line to be acquired from a lumber company.

CHICAGO, BURLINGTON & QUINCY.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the Black Hill & Fort Pierre, a narrow-gage line 41.9 miles long, which is controlled by the Burlington, to abandon operation of the line from Englewood, S. D., to Calcite.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $539,000 of its first and general mortgage 6 per cent bonds, series B, to be held in its treasury in partial reimbursement for capital expenditures.

ERIE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to pledge and repledge from time to time $12,000,000 of its first consolidated mortgage general lien 4 per cent bonds as collateral security for short term notes.

GREAT NORTHERN.—*Bond.*—The Interstate Commerce Commission has authorized the Montana Western to extend from January 1, 1922, to January 1, 1932, the maturity of a six per cent first mortgage bond for $165,000.

KANSAS, OKLAHOMA & GULF.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $219,000 of first mortgage 5 per cent bonds, series 1978, in reimbursement of capital expenditures, said bonds to be pledged and repledged from time to time as collateral security for short term notes.

LONG ISLAND.—*Dividend.*—The directors of this company on January 2 declared a dividend of 6 per cent on the outstanding capital stock to come out of 1929's earnings. This compares with the 4 per cent dividend declared out of 1928's earnings. Practically all of the stock of the Long Island is owned by the Pennsylvania.

LOUISIANA & ARKANSAS.—*Securities.*—The Interstate Commerce Commission has authorized the Louisiana & Arkansas (Del.), to assume obligation and liability in respect of $2,600,000 of promissory notes of the Louisiana & Arkansas (Ark.), at an interest rate not exceeding 6 per cent and to pledge and repledge from time to time not exceeding $3,250,000 of its first mortgage 5 per cent, series A, bonds as security therefor.

MERIDAN & BIGBEE RIVER.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue $200,000 of common stock and $500,000 of first mortgage 10-year 6 per cent bonds, the securities to be delivered at par to a contractor in payment for the construction costs incurred on the Meridian-Crommwell segment of its line.

MISSISSIPPI SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized the Edward Hines Yellow Pine Trustees to abandon the operation of its line extending from Lumberton, Miss., southward to Kiln, 49.9 miles.

NORTHERN PACIFIC.—*Construction.*—The Interstate Commerce Commission has authorized this company and the Oregon-Washington Railroad & Navigation to construct a branch line from Aloha, Wash., northerly to the north bank of the Hoh river, 67 miles, and the operation by the O-W R. R. & N. over the N. P. from Hoquiam, Wash., via Aloha to Moclips, 26.5 miles. The Port Angeles Western was also authorized to construct a line from Forks, Wash., southeasterly to the north bank of the Hoh river, and thence easterly to Spruce, a total distance of 24 miles. The estimated cost of the N. P.-O-W. R. R. & N. line is $6,421,339 and that of the Port Angeles line is $1,031,511.

OKLAHOMA-SOUTHWESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon the operation of its line between Bristow, Okla., and Nuyaka, 23.9 miles.

OREGON-WASHINGTON RAILROAD & NAVIGATION.—See Northern Pacific.

PITTSBURGH & WEST VIRGINIA.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $6,000,000 of first mortgage 5 per cent bonds for the purpose of continuing construction work on the Connellsville extension and also to refund an issue of $2,000,000 of notes.

PITTSBURGH & WEST VIRGINIA.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue, at not less than par, $2,000,000 of unsecured short term notes at a rate of interest not to exceed 5½ per cent in connection with the construction of its Connellsville extension. The notes are to be issued as a temporary financial expedient pending a more favorable bond market.

PORT ANGELES WESTERN.—See Northern Pacific.

READING, MARIETTA & HANOVER.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line, operated by the Reading, from Chickies to Marietta Junction, Pa., 7.36 miles.

ST. LOUIS SOUTHWESTERN.—*Operation of Gideon & North Island.*—Effective January 1, the St. Louis Southwestern took over the operation of the Gideon & North Island and the jurisdiction of all general and local officers of the St. Louis Southwestern was extended over the Gideon line.

SOUTHERN PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon 12.7 miles of its Mills City (Oregon) branch.

SOUTHERN PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Clackamas Eastern by purchase of its capital stock for $250,000.

SOUTHERN PACIFIC.—*Increase in Authorized Capital Stock.*—The stockholders of this company at their meeting to be held on April 9 will be requested to approve an increase in the authorized capital stock of the company of $200,000,000.

WABASH.—*Preferred Stockholders Not Entitled to Preferential Back Dividends.*—The Supreme Court of the United States on January 6 held that the holders of Class A preferred non-cumulative stock are not entitled to receive preferential dividends up to 5 per cent for each year from 1915 to 1926, inclusive, to the extent that such dividends were earned but not paid, before any dividends are paid upon other stock nor to restrain the company from paying dividends upon preferred B or common stock unless it shall have first paid such preferential dividends of 5 per cent on the A stock. During the years in question $16,000,000 of net earnings that could have been used for the payment were expended upon improvements and additions to the property and equipment of the road. The court says that "when, as was the case here, the dividends in each fiscal year were declared to be non-cumulative and no net income could be so applied within the fiscal year referred to in the certificate, the right for that year was gone. If the right is extended further upon some conception of policy, it is enlarged beyond the meaning of the contract and the common and reasonable understanding of men."

Average Prices of Stocks and of Bonds

	Jan. 7	Last week	Last year
Average price of 20 representative railway stocks.	126.94	127.39	130.55
Average price of 20 representative railway bonds..	92.90	92.81	92.99

Dividends Declared

Carolina, Clinchfield & Ohio.—Common, 1 per cent, quarterly; Unstamped certificates, 1¼ per cent, quarterly, both payable January 10 to holders of record December 31.

Delaware, Lackawanna & Western.—$1.50, quarterly; Extra, $1.00, both payable January 20 to holders of record January 4.

Long Island.—$50 par capital stock, 6 per cent, payable January 20 to holders of record January 13.

Norfolk & Western.—Adjustment Preferred, $1.00, quarterly, payable February 19 to holders of record January 31.

Railway Officers

J. W. Smith Named Vice-President of Boston & Maine

J. W. Smith, who has been general manager of the Boston & Maine for the past two years, has been appointed vice-president and general manager of that road, according to a recent announcement by Acting President Thomas Nelson Perkins. Mr. Smith's appointment, effective January 1, carries with it jurisdiction over the transportation and mechanical departments of the B. & M. His headquarters, as before, will be at Boston, Mass.

Mr. Smith was born at Bridgeburg, Ont., on December 17, 1879. After graduating from the high school at Charleston, Ill., in 1898, he entered railroad service on August 1 of that year, as clerk in the office of the general foreman of the Charleston round house of the Clover Leaf (now part of the New York, Chicago & St. Louis). In 1899 he transferred to the train service of the same road as brakeman, and later continued in the same service as conductor on what is now the Danville division of the New York Central.

After more than ten years in that work, he went, on May 1, 1910, to the Indiana Harbor Belt as traveling yardmaster. He occupied this post but a few months, and on November 18 of the same year was promoted to general yardmaster of the same road at Gibson, Ind. On May 4, 1912, Mr. Smith was advanced to the position of assistant superintendent, and on June 13, 1922, became general manager of the Indiana Harbor Belt, with headquarters at Gibson, under the late George Hannauer, who was at that time vice-president of the I. H. B.

On August 11, 1927, Mr. Smith went to New England as assistant to Mr. Hannauer, who had been elected president of the Boston & Maine. He became general manager of that road on January 1, 1928, and held that position until his recent appointment as vice-president in charge of operation.

As general manager of the Boston & Maine, Mr. Smith has been in direct

J. W. Smith

charge of the transportation forces of that railroad during the past two years. In that position, he has been largely responsible for the successful results of the extensive program of improvements and additions to roadway, yards, terminals and equipment, carried out under the direction of the late President Hannauer, which has produced such marked improvements in the transportation service and in the operating efficiency of the Boston & Maine.

Burnap Succeeds Weldon as Vice-President of C. N. R.

Robert L. Burnap, who has been assistant general freight traffic manager of the Canadian National, with headquarters at Montreal, Que., since 1927, has been appointed vice-president in charge of traffic of that road, succeeding A. T. Weldon, retired, who held that position since January, 1927. The change became effective January 3. Both men have spent approximately forty years in railroad service, and in both cases the greater part of this service has been with lines now making up the Canadian National.

Mr. Burnap, who was born on September 20, 1872, is a native of Burlington, Vt. He was educated in the public schools of that city, and later attended Dartmouth College, from which he graduated in 1894. In the fall of that year he entered railroad service as a clerk in the office of the station agent of the Central Vermont at Ogdensburg, N. Y. From April 15 to December 5, 1895, he was timekeeper of the same road at Ogdensburg, and on the latter date became associated with the freight traffic department as clerk to the division freight agent at the same point. In April, 1896,

R. L. Burnap

he went to New York to join the freight traffic department of the Central Vermont there, as clerk in the office of the commercial agent. On September 1 of the same year he was appointed traveling freight agent at New London, Conn., and in February, 1900, became commercial agent at New York, a position which he held until August 14, 1905, when he was transferred to St. Albans, Vt., to assume the duties of general freight agent of the road.

Three years later, Mr. Burnap entered the service of the Grand Trunk as assistant general freight agent, with headquarters at Chicago. From that position he was appointed assistant freight traffic manager of the same road on November 1, 1911; traffic manager on May 1, 1919, and freight manager on March 1, 1920. In November, 1927, he became assistant general freight traffic manager of the Canadian National and freight traffic manager of the Central Vermont, with headquarters at Montreal, and with jurisdiction in respect to the freight traffic of these two companies in the United States. These positions he held at the time of his recent promotion to the vice-presidency.

In addition to the official railroad positions mentioned above, Mr. Burnap has served from time to time on various freight traffic associations, and was formerly a member of the Traffic Executives Committee of the Central Freight Association.

A. T. Weldon

Albert T. Weldon, the retiring vice-president, whom Mr. Burnap succeeds, was born at Dorchester, N. B., on March 6, 1876, and entered railway service as a car checker in the local freight office of the Intercolonial (now part of the Canadian National) at Moncton in 1890, and for over ten years was employed in various capacities in the freight traffic service of that road. In December, 1901, he was appointed chief clerk to the division freight agent at Halifax, N. S., a position which he held until August, 1904, when he became secretary to the Halifax Board of Trade. He returned to railroad work in 1907, becoming general sales agent of the Port Hood-Richmond Railway & Coal Company at Halifax in May and division freight agent of the Intercolonial at the same point in November of the same year.

From 1909 to 1914 Mr. Weldon served

as general freight and passenger agent of the Black Diamond Steamship Company, with headquarters at Montreal, Que., and in 1914 returned to Moncton, N. B., as assistant general freight agent of the Canadian Government Railways. In May, 1917, he was advanced to general freight agent of those lines, and on January 1, 1919, was appointed assistant freight traffic manager of the Canadian National, with jurisdiction over the Eastern lines of that system. In March, 1923, he became traffic manager of the Atlantic region of the Canadian National, and in January, 1927, vice-president of that system in charge of traffic and express, with headquarters at Montreal and jurisdiction over freight and passenger traffic. He held this position at the time of his recent retirement.

Executive

W. H. Askew, assistant to vice-president of the Gulf, Mobile & Northern has also been elected assistant to vice-president of the New Orleans Great Northern.

G. L. Coleman, first vice-president of the Northeast Oklahoma, has been elected president, to succeed **J. F. Robinson,** deceased, and has been succeeded by **John A. Robinson.**

John A. Hulen, traffic manager of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Tex., has been promoted to vice-president of the roads and **J. H. Aydelott,** general superintendent of the Illinois district of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., has been promoted to general manager of the above two roads, following the resignation of **F. E. Clarity** as vice-president and general manager. **C. D. Peckenpaugh,** general superintendent of the Missouri district of the Burlington, with headquarters at St. Louis, Mo., succeeds Mr. Aydelott, while **J. D. Farrington,** superintendent of the Aurora division, with headquarters at Aurora, succeeds Mr. Peckenpaugh. Mr. Farrington is succeeded by **H. D. Brown,** superintendent of the La Cross division, with headquarters at Grand Crossing, Wis., who in turn is succeeded by **S. L. Fee,** division superintendent of the Alliance division, with headquarters at Alliance, Neb. Mr. Fee is succeeded by **H. J. Hoglund,** transportation assistant to the general manager at Chicago.

Financial, Legal and Accounting

P. J. Lala has been appointed secretary and treasurer of the Louisiana Southern, succeeding **L. G. Pfefferle,** resigned.

A. R. Wood, secretary-auditor of the St. Louis Southwestern of Texas, with headquarters at Tyler, Tex., has been elected treasurer, with the same headquarters, succeeding **J. W. Hogan,** who retired on December 31. **M. G. Mitchell** has been appointed auditor of disbursements, with headquarters at Tyler. **H. P. Taylor,** assistant auditor with headquarters at Tyler, retired on December 31, and the position of assistant auditor has been abolished.

Robert E. Wiley, assistant general attorney of the Missouri Pacific, with headquarters at Little Rock, Ark., has been promoted to general attorney to succeed **E. B. Kinsworthy,** retired, and will be succeeded by **Henry Donham,** prosecuting attorney for the Sixth Judicial Circuit.

Operating

D. S. York has been appointed trainmaster of the Stockton division of the Southern Pacific, with headquarters at Tracy, Cal.

C. W. Brecht has been appointed assistant to the vice-president in charge of operation and maintenance of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio.

B. J. Quilty, superintendent of the Canadian Pacific, with headquarters at Schreiber, Ont., has been transferred to Farnham, Que., in the same capacity, succeeding **A. Williams,** who has been transferred to Smith Falls, succeeding **F. M. Rutter.**

C. E. Olp, division superintendent of the New York Central, with headquarters at Oswego, N. Y., has been appointed to a similar position on the Rochester division, with headquarters at Rochester, N. Y.

Hans Schantl, division engineer of the Missouri-Illinois, with headquarters at Bonne Terre, Mo., has been promoted to superintendent, with the same headquarters, succeeding **W. G. Patton,** who has resigned to enter the employ of the St. Joseph Lead Company, New York.

C. A. Veale, trainmaster of the Southern Pacific, has been appointed assistant division superintendent, East Bay Electric Division, with headquarters as before at Oakland Pier, Cal., succeeding **F. E. Yoakum. F. E. Sullivan** has been appointed trainmaster succeeding Mr. Veale.

P. A. Hammond, assistant to the vice-president and general manager of the Quebec Central, has been appointed car accountant, succeeding **W. S. Moy,** who retired from active service on January 1, after over fifty years of service. The position of assistant to the vice-president and general manager has been abolished.

N. J. Van Schoyck, supervisor of mail and express traffic of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, has been promoted to manager of mail and express traffic, with the same headquarters. **C. F. Rank,** chief clerk to the supervisor of mail and express traffic, has been promoted to assistant manager of mail and express traffic, with headquarters at Chicago.

John L. Gressitt, division engineer of the Pennsylvania, with headquarters at Fort Wayne, Ind., has been appointed superintendent of the Sunbury division. Mr. Gressitt has been in the service of the Pennsylvania for 21 years, having first entered the service of that road as chairman on the Pittsburgh division in 1908. He subsequently served as rodman, transitman, assistant supervisor and supervisor on various divisions of the Pennsylvania. He was appointed division engineer, Western region, in January, 1927, the position he held at the time of his recent promotion to the position of superintendent.

W. Wicker, assistant superintendent in charge of the Little Rock, Ark., terminal of the Missouri Pacific, has been promoted to superintendent of the Joplin division, with headquarters at Nevada, Mo., and has been succeeded by **M. F. Weeks,** assistant superintendent of the Alexandria, La., terminal, who has, in turn, been succeeded by **J. S. Walker. J. A. Greig** has been appointed trainmaster of the Joplin division, with headquarters at Nevada, Mo. **H. J. Wade** has been appointed trainmaster of the Kansas City terminal division, with headquarters at Kansas City, Mo.

Effective January 1, **W. H. Wood,** assistant superintendent of the Mohawk division of the New York Central, was appointed superintendent of the Ontario division, with headquarters at Oswego, N. Y., succeeding C. E. Olp, transferred. Mr. Wood has been in the service of the New York Central since 1893, having first entered service with that road as night yard master at Utica, N. Y. He was later appointed yard conductor with headquarters at Rensselaer, N. Y., returning to Utica in the same capacity in 1910. Mr. Wood became train master at Albany in 1912, following which he was promoted to the position of assistant superintendent of the Mohawk division, the position he held at the time of his recent promotion.

W. H. Wood

Traffic

F. H. Huesman has been appointed assistant general freight agent of the Union Pacific with headquarters at Los Angeles, Cal., to succeed **J. P. Quigley,** resigned.

I. R. Garreston has been appointed assistant general agent of the St. Louis-San Francisco, with headquarters at Chicago, succeeding **M. D. Riggs,** resigned.

E. S. Smith, commercial agent of the Atlanta, Birmingham & Coast at Tampa, Fla., has been appointed general eastern agent, with headquarters at New York, succeeding **J. W. Daniels.**

J. D. Youman has been appointed assistant to the president in charge of traffic and industrial development of the Louisiana Southern, with headquarters at New Orleans, La., succeeding **J. M. Fush,** resigned.

J. A. Russell has been appointed general agent of the Erie, with headquarters at Portland, Ore. **Allan Barr** has been appointed general agent, with headquarters at Akron, Ohio, to succeed **W. R. Busenbark,** retired.

Clarence L. Williams, general agent of the Canadian Pacific, with headquarters at Pittsburgh, Pa., has retired from the service of that road after having been with the company for 45 years. He had been general agent at Pittsburgh since 1911. **William A. Shackelford,** district passenger representative at Boston, Mass., will succeed Mr. Williams as general agent at Pittsburgh.

The following officers of the Gulf, Mobile & Northern: **E. L. Mountfort,** freight traffic manager, **J. O. Gill,** general freight agent, and **G. M. White,** general passenger agent, all with headquarters at Mobile, Ala., have also been appointed to similar positions with the New Orleans Great Northern.

Charles R. Custer, assistant general passenger agent of the Chicago & North Western, with headquarters at Chicago, has been appointed manager of the advertising department with the same headquarters. **Harry W. Frier** has been appointed assistant manager, advertising department.

R. A. Bishop, who at one time was general passenger agent of the Chicago Great Western with headquarters at Chicago, has been appointed manager of mail, baggage and express traffic of that road with headquarters at Chicago and has taken over the duties of **C. H. Rupert,** general baggage, milk and express agent who has been on a leave of absence because of illness. **P. R. Flanagan,** assistant general freight agent with headquarters at Chicago has been appointed general freight agent in charge of the solicitation of freight traffic with the same headquarters. The title formerly held by Mr. Flanagan has been abolished.

H. D. Landry, J. K. James and **S. F. Baker,** general freight agents of the St. Louis Southwestern, the former two with headquarters at St. Louis, Mo., and the latter at Tyler, Tex., have been promoted to assistant traffic managers with the same headquarters. **E. S. White,** assistant general freight agent with headquarters at St. Louis, has been appointed perishable freight agent with the same headquarters. **F. H. Westerman** has been appointed assistant general freight and passenger agent with headquarters at St. Louis. **E. E. Perkins** has been appointed assistant general agent with headquarters at Winston-Salem, N. C.

Engineering, Maintenance of Way and Signaling

C. J. Frederici, assistant engineer of the Chicago & North Western, with headquarters at Winner, S. Dak., has been promoted to division engineer, with headquarters at South Pekin, Ill., succeeding **L. M. Bates,** deceased.

J. G. Wishart, office engineer of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been promoted to principal assistant engineer with the same headquarters, a newly created position, effective January 1.

F. H. Masters, assistant chief engineer of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., has been appointed acting chief engineer to take the place of **A. Montzheimer,** who has been granted a temporary leave of absence.

W. H. Miesse, resident engineer of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, has been appointed engineer maintenance of way of the Evansville, Indianapolis & Terre Haute, with headquarters at Washington, Ind.

William Shea, general roadmaster of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, has been appointed assistant engineer of maintenance of way, with the same headquarters, and the title of general roadmaster is discontinued.

S. R. Hursh, division engineer of the Pennsylvania, with headquarters at Camden, N. J., has been transferred in the same capacity to West Philadelphia, Pa., succeeding C. E. Adams. **H. W. Anderson,** division engineer at Akron, Ohio, will replace Mr. Hursh, with headquarters at Camden.

E. J. Bayer, engineer maintenance of way of the Peoria & Eastern, with headquarters at Indianapolis, Ind., has been appointed division engineer of the Indianapolis terminal and Springfield division of the Cleveland, Cincinnati, Chicago & St. Louis, with the same headquarters, succeeding J. W. Burt, who retired on January 1.

J. H. Oppelt, supervisor of signals of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed signal engineer with jurisdiction on the entire system and with the same headquarters. **Harry Combs** supervisor of signals with headquarters at Tipton, Ind., has been appointed assistant signal engineer, with jurisdiction on the Lake Erie & Western and Clover Leaf districts, with the same headquarters. The positions of supervisors of signals at Cleveland and Tipton have been abolished.

Mechanical

George W. Rink, assistant superintendent of motive power of the Central of New Jersey, with headquarters at Jersey City, N. J., has been transferred to Elizabeth, N. J., as mechanical engineer.

William Walker, locomotive foreman of the Canadian National, with headquarters at Saskatoon, Sask., has been appointed division master mechanic, with headquarters at Prince Albert, Sask., succeeding **William L. Loomis,** deceased. Mr. Walker will be succeeded by **Murray K. Robb,** formerly locomotive foreman at Regina, Sask.

Frank H. Becherer, superintendent of the car department of the Central of New Jersey, with headquarters at Jersey City, N. J., has been appointed assistant superintendent of motive power and equipment, with the same headquarters. Mr. Becherer was born on August 23, 1882, in New York City. He entered railway service in 1901 as billing clerk on the Erie, serving in that position until 1903, when he became assistant chief clerk of the car department.

Frank H. Becherer

In 1904 he was appointed piece work supervisor of the car department and the following year he became chief clerk of that department. In June, 1907, Mr. Becherer resigned to enter the service of the Pennsylvania, subsequently serving as billing clerk, freight car repairer, freight car inspector, air brake inspector, piece work inspector, traveling inspector, assistant foreman car inspector (freight), assistant foreman passenger cars, foreman passenger cars and fore-

man enginehouse, powerhouse and machine shop. In 1918 he became associated with the Bureau of Valuation of the Interstate Commerce Commission as junior inspector of car equipment and in October of the following year he became senior mechanical engineer engaged in valuing freight, passenger, work, powerhouse and machine shop equipment and locomotives. He resigned on March 1, 1922, to enter the service of the Boston & Maine as assistant engineer in the corporate engineer's office. He became mechanical inspector in October, 1922, and in April, 1923, was appointed general inspector of car maintenance, which position he held until June, 1925, at which time he was appointed assistant to the mechanical superintendent of the same road. Mr. Becherer resigned from the latter position in April, 1926, to enter the service of the Central of New Jersey as superintendent of the car department, the position he held at the time of his recent appointment.

Purchases and Stores

J. L. Cowan, assistant purchasing agent of the Southern Pacific, Texas and Louisiana Lines, with headquarters at Houston, Tex., has been promoted to purchasing agent with headquarters at New Orleans, La., to succeed **N. P. Randolph,** who retired on December 31.

J. S. Pitchford, assistant inspector of stores of the Seaboard Air Line, with headquarters at Portsmouth, Va., has been appointed assistant storekeeper, Portsmouth general store, with the same headquarters. He will be succeeded by **L. H. Haynes,** storekeeper at Savannah, Ga. **H. F. Perritt,** assistant storekeeper at Portsmouth, Va., has been appointed storekeeper at Savannah Ga., succeeding Mr. Haynes.

Special

T. E. Bickers, a mediator of the United States Board of Mediators, has resigned to become supervisor of personnel of the Pere Marquette, with headquarters at Detroit, Mich.

Dr. Charles C. Green has been appointed chief surgeon of the Southern Pacific Lines in Texas and Louisiana, succeeding **Dr. R. W. Knox,** who retired on January 1.

A. W. MacKenzie, agricultural representative for the Nova Scotia government in Cumberland County, N. S., and also manager of the Maritime Winter Fair, has been appointed superintendent of agriculture and colonization for the Canadian National for the Maritime Provinces, with headquarters at Moncton, N. B. **F. C. Biette,** superintendent of colonization in the Maritimes, has been appointed to take charge of the company's colonization in the Peace River country, in association with the Northern Alberta.

Obituary

Samuel Denison Adsit, general agent of the Virginian at Norfolk, Va., died on January 1.

J. White Sprong, purchasing agent of the Delaware & Hudson, with headquarters at Albany, N. Y., died on January 5.

Earl H. Fitzhugh, who retired as president of the Central Vermont in January, 1913, died in Kingston, Ont., on January 4, at the age of 77 years.

W. E. Farris, vice-president of the Mobile & Great Northern and the New Orleans Great Northern, with headquarters in New Orleans, died in that city on January 4, after a short illness. Mr. Farris was 71 years of age.

Edward Arnold, auditor of freight claims of the Canadian National, died at his home in Montreal last week from a heart attack. Mr. Arnold was 65 years of age and had been in railway service for nearly 50 years.

M. J. Costello, western traffic manager of the Great Northern, with headquarters at Seattle, Wash., died in St. Paul, Minn., on January 3, following a heart attack.

W. E. Farris, vice-president and general manager of the New Orleans Great Northern, with headquarters at New Orleans, La., died in that city on January 4. He was born on November 22, 1870, at Sandborn, Ind., and began railway work on August 1, 1891, as a telegraph operator and agent on the Evansville & Terre Haute. He remained in the service of this company at various places until April, 1905, when he was appointed agent in charge of Evansville & Terre Haute (now a part of the Chicago & Eastern Illinois) and the Chicago & Eastern Illinois terminals at Terre Haute, Ind. On December 31, 1910, he resigned from that position to go to the Buffalo & Susquehanna as assistant general freight and passenger agent; one month later he was promoted to general freight and passenger agent, and subsequently served also as purchasing agent of the same road until April, 1915 On the latter date he was elected vice-president and general manager of the New Orleans Great Northern, which position he held at the time of his death.

James Menzies, freight traffic manager of the Atlantic Coast Line with headquarters at Wilmington, N. C., died in that city early in December. He was born on May 4, 1860, at Inverness, Scotland, and entered railway service in February, 1876, from which date he was, consecutively: To the spring of 1880, a clerk in the freight department of the Grand Trunk; from the spring of 1880 to May, 1881, secretary to the superintendent of the same road; May to December, 1881, secretary to general freight agent, Louisville & Nashville; December, 1881, to August, 1887, chief clerk to the traffic manager, Florida Railway & Navigation Company (now part of the Seaboard Air Line); August, 1887, to October, 1889, assistant general freight agent of the same company; October, 1889, to 1892, general agent, Georgia Southern & Florida (now part of the Southern); October, 1892, to April, 1893, assistant general freight agent, Jacksonville, Tampa & Key West, Florida Southern (both now parts of Atlantic Coast Line) and Indian River Steamboat Company; April, 1893, to June, 1895, general freight agent of the same companies; June, 1895, to April 15, 1898, assistant general freight agent, Plant System; April 15, 1898, to July 1, 1902, general freight agent of the same system; July 1, 1902, to November 21, 1911, general freight agent, Atlantic Coast Line, which had absorbed the Plant System; November 21, 1911, to July 7, 1918, freight traffic manager, Atlantic Coast Line; July 8, 1918, to February 19, 1920, during Federal control, assistant traffic manager-freight, Atlantic Coast Line. On February 20, 1920 he was appointed freight traffic manager, a position he held until his death.

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The Twelfth Street Coach-Yard of the Illinois Central at Chicago During the Blizzard of December 17